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DEMAND AND EFFICIENCY

THE penetrating and thought-provoking contributions which Mr. T. C. Battersby made to the discussions during the annual meeting of the Institution of Gas Engineers whetted our appetite for the address which he gave last week as Chairman of the Eastern Section, and we were not disappointed in the event. The address, which will be found on later pages of today's *Journal,* is characteristic of the author's approach to matters both technical and administrative and will be widely studied. The main theme of the address was an examination of the cost of gas and the price at which it can be sold in competition with electricity and having regard to the capacity of the consumer to buy. Mr. Battersby discerns a downward trend in domestic gas consumption concomitant with increased gas prices. The domestic purse is strained by the competing attractions of the age; and 'although generally throughout the country, and for most purposes, gas prices are competitive with electricity, any further adjustment of rates might find us priced not only out of our competitive position but out of the family budget.' In other words, economy in gas consumption will tend more and more to become a major consideration.

In a series of graphs which we reproduce Mr. Battersby compared and analysed the costs of gas and electricity production. It will be seen that the national figures for 1951 disclose that while the cost of raw materials was 37% of the total cost of gas-making, almost tallying with electricity's figure of 39%, the gas industry had to find a further 27% for other manufacturing costs as against only 8% in the case of electricity generation. How can we reduce, or at any rate bring greater control to bear upon, these 'other manufacturing costs'? It is here that we come to the second theme of the address—costing as a tool for measuring the efficiency of manufacture and distribution. And it is of significance that much greater attention than formerly is being given to this aspect at meetings of the various sections of the Institution as well as at area board staff conferences. The important part which can be played by an adequate and well designed costing system in influencing the price at which gas can be sold to the public is being recognised. What is equally important is that such a system can give not only engineers but other officials a much better overall knowledge and grasp of working results.

The gas industry has been slow to apply modern methods to measure the efficiency of detailed processes. Mr. Battersby quoted passages from the 1943 Report of the British Gas Federation and also from the Heyworth Report of 1945, both of which reports noted the absence of well-designed costing systems and the lack of comparable statistics, and recommended action to bring the gas industry into line with other industries. It is all to the good that this type of action is becoming more general and that, speaking of the practice in the Eastern area, Mr. Battersby should emphasise what good results can in fact accrue from the co-operation of engineer and accountant in settling on cost principles and making the figures available at all levels. It is an effective measure towards the pegging of gas prices. And turning to a particular aspect of economy we would call attention to the author's striking figures relating to unaccounted-for gas and the steps which have been taken so successfully in the Berkhamsted undertaking of the Eastern Gas Board in bringing down the unaccounted-for percentage. A reduction of the unaccounted-for figure to even 4% (compared with Berkhamsted's 2.25%) would save the Board a matter of £290,000 per annum. In another direction, an increase in therms per ton of coal carbonised under prevailing conditions from 74 to 75 would save a further £71,000. This general tightening-up can be accomplished; that, we take it, is the purport of Mr. Battersby's realistic address.

EXCELLENT RELATIONS

AN important Institution Week event strictly unrelated to the Institution of Gas Engineers but of considerable concern to very many of its members was the sixth annual general meeting of the Gas Officers' Guild under the same roof as the Institution meeting on May 27, at which Mr. Frank Dawson (North Thames) who succeeded Mr. G. E. Currier on the latter's elevation to area Deputy Chairmanship status in 1949, retired from the chairmanship on completing his maximum period of office and was in turn succeeded by Mr. Joseph F. Rust (Newport). It was an important meeting not only because of the business transacted but because it served to demonstrate that even individualists accustomed to play a lone hand have become convinced that their relations with their employers are best conducted through accredited representatives without rancour and in good faith on both sides. Nationalisation of the gas industry in one form or another has probably come to stay whatever the views of opposing political parties, and those employed in it have only one effective employer, though he may speak on occasion with 12—or even 13—different voices. The employer has in fact, even if not in theory, a frightening monopoly of employment and the more senior, and consequently more specialised, the employee or officer becomes, the more complete is that monopoly.

It is good to note from the annual report that 'relations of the Guild with the Gas Council and area boards continue to be excellent' and that 'the Gas Council as a body appreciates the desirability and indeed the necessity of establishing good relations with all grades of staff founded on recognised machinery whereby agreements may be made between them and the duly accredited representatives of employees.' The top floor of the edifice was built during the year under review by setting up the Senior Gas Officers' Joint Council. Thus there are now three national councils, (a) the National Joint Industrial Council, concerned mainly with manual workers, (b) the National Joint Council for Gas Staffs, on which the Gas Officers' Guild shares representation with Nalgo, the British Gas Staff Association, and other organisations, and (c) the Senior Gas Officers' Joint Council, on which the officers' side is represented only by the Guild and Nalgo. On the assumption that majorities will be found in most areas to support negotiating machinery, discussions are in progress for setting up area joint councils under the ægis of the Senior Gas Officers' Joint Council, and a constitution and rules for such councils have been drafted. Many problems arise that are best settled between area boards and their staffs or officers, being of purely local or individual significance, but major questions will remain in the hands of the national organisations.

It would appear from the report that the work of the Senior Gas Officers' Joint Council was held up for part of the year by a ballot on the question of contracting out of that part of the constitution which relates to settlement by negotiation of terms and conditions of service of officers. It was recognised on both sides that certain of the highest officials would naturally and appropriately settle their own terms direct with their employers, but the Gas Council and certain area boards persisted in asking for general exclusion. The officers' side could not agree to this unless there was clear indication that the demand came from a majority of the officers. The upshot was that all the boards sought exclusion of their officers from the negotiating machinery. In accordance with the Council's constitution a ballot was taken in every area covering every category or officer, and every officer within the purview of the Council (other than special groups) whether belonging to any organisation or not. Of all the officers eligible to vote, about one-quarter voted in favour of contracting out. As we write, the actual figures have not been published, but we understand that the overall result of the ballot was satisfactory so far as the Guild was concerned. With the ballot and all the work that it entailed now out of the way, the Joint Council has been able to apply itself to the important tasks in hand and the Guild has resumed the even tenor of its ways. As an organisation for professional people in the industry it has to undertake specific work of a highly specialised character, and the annual report is a commendable account of its stewardship.

NALGO CONFERENCE

THE National Association of Local Government Officers, which shares with the Gas Officers' Guild the representation of the officers' side on the Senior Gas Officers' Joint Council, and with the Guild and the British Gas Staff Association and other bodies the staff side on the National Joint Council for Gas Staffs, has just held its annual conference at Margate, at which Mr. George Newman, the Association's organising officer for gas staffs, said the holding of the ballot (to which we have already referred in our note on the Gas Officers' Guild) in which officers were asked to say whether they wished their salaries and conditions of service to be negotiated by the Council had been possibly the most important activity of the Council since its formation in 1951. 'Generally,' said Mr. Newman, 'senior officers have preferred collective negotiation to personal and individual approach to their boards; this is a hopeful sign.' Although well into five figures, the gas staff members of Nalgo represent but a small fraction of the 212,000 members of the Association on whose behalf constant watch is kept on the broader aspects of ensuring that salaries do not lag too far behind the constantly increasing cost of living. Referring to a salary rise last December following an earlier increase 12 months ago, Mr. Newman in his Margate speech said that while the employers could not accept the staff side's claim in its entirety the effect of the second increase was to put the scales for gas staffs generally comparable with, and at some ages slightly better than, those applicable in the local government and electricity services. Since then, perhaps inevitably, further increases have been claimed in those two fields, but they have met with stiff opposition.

All three organisations concerned with the interests

of gas staffs—the British Gas Staff Association, the Gas Officers' Guild, and Nalgo—have held their annual meetings within the past month. It is not our function to analyse the differences in their approach to what is generally accepted as a common end—a successful public service based on an adequately paid and satisfied staff. It is sufficient to record that all three organisations have achieved increases in membership. Their annual reports testify to generally friendly relations between employers and employed and to co-operation with each other. The good record which has existed in the industry with regard to staff relations for many years has been maintained, and satisfactory relations with all the unions concerned have been further strengthened and improved. There has been much consolidation in the first three years of nationalisation, and given a continuance of the spirit which at present pervades all the organisations the industry can look forward to even better days.

MECHANICAL HANDLING

THE present-day trend towards the handling of materials and goods of all types by mechanical means is perhaps the most striking single factor in the progress of British industry. Productivity teams visiting the United States have laid particular emphasis on this type of mechanisation, but it has been pointed out that, while there is in America no equipment which has not its British counterpart, there is a greater readiness to use it and it is recognised that expenditure in this direction brings almost uniquely immediate results. It would seem, therefore, that any reluctance to handle mechanically lies with industry rather than with the manufacturers, a fact which was confirmed by a visit to the Mechanical Handling Exhibition at Olympia (June 4-14). Here the variety of plant and equipment was truly remarkable, nearly 200 firms combining to demonstrate how judicious use of conveyors, elevators, hoists, stackers, loaders, and so on, brings good dividends in time and money saved.

The exhibition was appreciably larger than the last one in 1950 and was enjoyable in that attendances were good and the competitive element so strong in this specialised field that the whole was infused with a refreshing spirit of salesmanship. Mechanical handling in the gas industry is limited primarily to coal, coke, and oxide handling, and this aspect forms the principal subject of our review of the exhibition, which appears on later pages. In general there is less scope for development in this type of apparatus than in the varied range of equipment serving the factory, but we have sought to emphasise those points of definite progress which were discernible at Olympia. In addition to the actual exhibition a convention was held during practically the whole run, the 11 sessions dealing with such subjects as foundry mechanisation, electric overhead cranes, and electronics in materials handling. Among the speakers was Mr. B. Pollard, of W. J. Jenkins & Co., Ltd., and the Chairman for this session was Mr. W. K. Tate, Junior Vice-President of the Institution of Gas Engineers.

It is interesting to note that increasing interest in this subject has resulted in preliminary steps having been taken to form an Institute of Material Handling. A recent meeting in London at which 70 were present, mainly representing users rather than manufacturers, laid the foundations. It was agreed that material handling should have a status of its own, that discussion groups should be formed, and that all forms of the technique should come under review. It was emphasised that the Institute would not be for trade or business objects and that membership, of which there would be various classes, would be confined to individuals and not include firms or corporations. Thus a new technical association is to join the already long list of industrial bodies, one which, we feel sure, will have much to contribute to the continual raising of industrial efficiency.

FLUIDISATION TECHNOLOGY

LAST week a joint conference was held in London by the Chemical Engineering Group of the Society of Chemical Industry, the Chemical Engineering Section of the Koninklijk Instituut van Ingenieurs (President, Dr. J. C. Vlugter), and the Chemical Engineering Group of the Netherlands Chemical Society (President, Professor H. I. Waterman). The subject under discussion—to which three days were devoted—was fluidisation technology, one of the papers presented being by the Livesey Professor, Dr. A. L. Roberts, on the removal of hydrogen sulphide from coal gas and solvent extraction of sulphur from spent iron oxide. On the Thursday evening there was a dinner to conference members by invitation of Bakelite, Ltd., the toast of the Dutch societies being proposed by Dr. F. A. Freeth, O.B.E., F.R.S. Response was made by Dr. Vlugter and Professor Waterman, both of whom replied wittily in the English language, each providing an example of how to foster international relations in the sphere of chemical engineering. Once again we were led to contemplate the lack in our own educational system of any insistence on the desirability of grasping a practical use of languages other than our own native tongue.

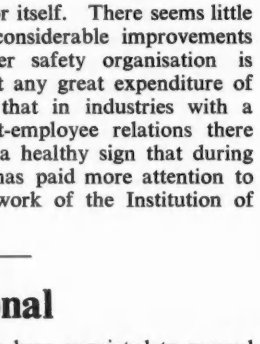
INDUSTRIAL ACCIDENT PREVENTION

THREE thousand people are killed and 750,000 are injured every year in the course of their employment—and these people are not just statistics. In the course of a recent lecture to the Royal Society of Arts, Mr. H. R. Payne, O.B.E., Chairman of the Industrial Safety Committee, Royal Society for the Prevention of Accidents, presented evidence to show that, by wider adoption of methods which have been well proved in a wide variety of industries, about one-half of these deaths and injuries could be avoided. The view should not be encouraged that conditions within a given industry or works are so very special that the safety principles which have proved successful in other places cannot be applied; nor should it be assumed that full compliance is already given to general and special regulations. The lecture, which embodied a plea for the greater employment of experienced and trained safety officers, was extremely interesting, and we very much like Mr. Payne's linking of cleanliness and accident rate. Efficiency, cleanliness, decent working conditions, and safety march together in response to enlightened direction and good team work. An ordinary good clean-up of mess and unnecessary dirt provides the first good evidence of a safety programme. It attracts the

attention of all ranks; it pays for itself. There seems little doubt that in most instances considerable improvements in accident rates where proper safety organisation is encouraged can be had without any great expenditure of capital. And it is significant that in industries with a tradition of good management-employee relations there is a good safety record. It is a healthy sign that during recent years the gas industry has paid more attention to safety, as our pages and the work of the Institution of Gas Engineers testify.

Personal

Mr. J. A. Hepworth, B.SC., has been appointed to succeed **Mr. S. T. P. Perry,** who retires this month from the post of Deputy Chief Engineer of the North Thames Gas Board after 50 years' service with the Gas Light and Coke Company and latterly with the North Thames Gas Board. Mr. Hepworth, who was a member of the gas industry productivity team which visited the United States earlier this year, went from West Leeds High School to Leeds University where he graduated as a B.SC. in fuel and gas engineering. The next year he became Junior Assistant Engineer under the Gas Light and Coke Company and subsequently served at the Company's works at Beckton, Nine Elms, Southall, and Harrow. He went from Station Engineer, Stratford, to Group Engineer of the Board in 1949, and was appointed Assistant Chief Engineer last year. The following appointments have also been made in consequence of Mr. Perry's retirement: **Mr. H. W. Moys** (Station Engineer, Bromley), to be Group II Engineer; **Mr. R. G. Plummer** to be Station Engineer, Bromley; **Mr. C. P. N. Cox** to be Deputy Station Engineer, Fulham; and **Mr. R. W. Apps,** to be Senior Assistant Engineer, Fulham. The North Thames Gas Board also announces that **Mr. W. W. Chisholm,** Works Manager at Slough, has been appointed Station Engineer at the Slough works.



Mr. J. A. Hepworth.

Mr. John Terrace, Hon. Secretary of the Institution of Gas Engineers, was taken ill a few days ago and has had to undergo a major operation. The latest news is that he is progressing as well as can be expected. Mr. Terrace is at present in Room 45, Tratnell Wing, Beckenham Hospital, Beckenham, Kent.

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Mr. S. K. Patterson, ASSOC.M.INST.GAS E., Works Engineer, Cambridge, has been appointed Assistant Engineer and Manager of the Dumbarton and Helensburgh district of the Scottish Gas Board. Before joining the staff at Cambridge, Mr. Patterson, who received his early training at Dunfermline, was Assistant Engineer and Manager at Galashiels and district.

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Mr. H. Tindale, General Manager of the Australian Gas Light Company for the past 20 years, will retire on June 30. His successor from July 1 will be **Mr. W. W. Pettingell,** who joined the staff in 1936 as a chemist and has been Assistant General Manager (Technical) since January of last year. From the same date, **Mr. J. B. Robinson,** who joined the Company in 1946 as Assistant Secretary, was appointed Secretary in 1947, and later became Assistant General Manager (Commercial), will become Assistant General Manager. The positions formerly held by Mr. Pettingell and Mr. Robinson are to be abolished. During his visit to Britain last year, Mr. Pettingell was admitted a member of the Institution of Gas Engineers, one of the few Australians to be so honoured.

Obituary

Mr. Horace H. Gale, Purchasing Manager for many years with Ashmore, Benson, Pease and Co., Ltd., gas plant manufacturers, Stockton, has died at the age of 62.

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Mr. W. Stanley Martlew, District Service Manager of the Atherton, Leigh, and Tyldesley (Lancs) undertakings of the North Western Gas Board, died suddenly on June 4, aged 58 years. He was at his office the previous day. He had 40 years' service with the Leigh Corporation, starting as a junior clerk in the gas and water department in January, 1909. He was appointed Deputy Gas and Water Engineer in 1929, and in 1942 became Leigh's fourth Gas and Water Engineer, in succession to Mr. F. Bowen, M.SC.

Diary

June 19.—Wales Juniors: Ladies' Day. Visit to Ascot Gas Water Heaters, Ltd., Neasden.

June 20.—Scottish Juniors (Western): Annual Golf Outing and Competition.

June 21.—Western Juniors: Summer Meeting and Ladies' Day, Ilfracombe.

June 21.—London and Southern Juniors: Summer Visit and Ladies' Day, Maidstone.

June 21.—Manchester Juniors: Ladies' Day, Morecambe and Lancaster.

June 23-25.—British Wood Preserving Association: Second Convention, Queen's College, Cambridge.

June 24.—London and Southern Section, I.G.E.: Summer Meeting.

June 26.—Midland Juniors: Ladies' Day, Leicester.

June 26.—Gas Research Board: Extraordinary General Meeting (winding up), 17, Grosvenor Crescent, S.W., 4 p.m.

June 26.—British Coke Research Association: Fifth Conference, 'Further Studies in Coking Pressure'; principal speakers: W. Idris Jones, T. C. Finlayson, H. E. Blayden, and G. E. Hall; William Beveridge Hall, London University, 2.45 p.m.

June 27.—Northern Juniors: Annual General Meeting, Newcastle.

July 1.—South Eastern G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

July 1.—East Midlands G.C.C.: Annual Meeting, Victoria Station Hotel, Nottingham, 11.30 a.m.

July 1-4.—Royal Show, Newton Abbott. Gas Council exhibit.

July 5-19.—British Food Fair, Olympia. Gas Council exhibit.

July 9.—National Benzole Association: Annual General Meeting, Wellington House, Buckingham Gate, S.W.1, 3.30 p.m.

July 11.—Midland Section, I.G.E.: Summer Meeting, Leamington Spa, 11 a.m. Visits to gasworks, S. Flavel & Co., Ltd., and Warwick Castle. Ladies invited.

July 16.—South Western Section, I.G.E.: Summer Meeting and Ladies' Day, Barnstaple.

July 21.—Eastern G.C.C.: Connaught Rooms, Kingsway, W.C.2, 2 p.m.

July 21.—West Midlands G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

July 31.—North Thames G.C.C.: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Eastern Section of the Institution

Annual General Meeting at Sheringham

THE second annual general meeting of the Eastern Section of the Institution of Gas Engineers was held in brilliant weather at Sheringham on Monday and Tuesday, June 9 and 10. A great many of the record number who attended were able to arrive over the week-end and make advance acquaintance with a golf course which can have few rivals for beauty of seascape. The official golf and—an innovation—bowls competitions were played on the Monday morning; the first business sessions being held in the afternoon in the ballroom of the Grand Hotel. Mr. T. C. Battersby, the Chairman, was supported by the Senior and Junior Vice-Chairmen, Mr. F. A. Rhead (Peterborough) and Mr. Bernard Clarke, M.B.E., J.P. (Lincoln), and by the Hon. Secretary and Treasurer, Mr. J. Hunter Rioch (Cambridge).

Councillor F. G. Jordan, J.P., Chairman of the Sheringham U.D.C., with admirable brevity welcomed the delegates to his town, which in 50 years had grown up without losing any of its youthful charm.

The Chairman, having responded, expressed his own and the meeting's great appreciation at the presence of Sir John Stephenson, C.B.E., J.P., Chairman of the Eastern Gas Board. Unfortunately, however, neither the Chairman nor the Deputy Chairman of the Gas Council had been able to come; and regrets for absence had also been received from Mr. John Dyde, Past-President of the parent Institution, Mr. Sydney Smith, Chairman, East Midlands Gas Board, Sir Ernest Smith, C.B.E., and Mr. C. G. Hyde, M.C., and Mr. J. S. Smith, O.B.E., of the Ministry of Fuel and Power. Mr. George Cûrrier, O.B.E., President of the Institution, had sent a telegram of regrets and good wishes, but they were able to extend a warm welcome to the Senior Vice-President, Mr. J. T. Haynes, and to the Secretary, Dr. W. T. K. Braunholtz, O.B.E. The Eastern Section, added the Chairman, was particularly glad to be the first to welcome Mr. R. Kelf-Cohen, C.B., back to the industry as Under-Secretary, Gas Division of the Ministry of Fuel and Power.

The **Chairman,** next referred to the regretted loss by death of Mr. George Wright, of Lincoln, who was President of the Eastern Counties Association in 1936, and of another old friend, Mr. S. Hands.

New Members and Resignations

Four new members were then elected: H. Broomhead, of W. C. Holmes & Co.; S. S. Francis, Messrs. Woodall-Duckham; H. D. A. Yates, M.B.E., Messrs. Humphreys & Glasgow; C. H. Pearson, Messrs. Parkinson and Cowan.

Resignations had with regret been accepted from H. R. Wimhurst (Barton Mills), J. Green (Wisbech), and J. E. Young (Grantham).

Officers, 1952-53

The result of the ballot for officers was received with applause; the following being elected:—

Chairman: F. A. Rhead (Peterborough).

Senior Vice-Chairman: Bernard Clarke, M.B.E., J.P. (Lincoln).

Junior Vice-Chairman: W. A. Evetts, M.C. (Watford).

The adoption of the annual report (which recorded events closely followed in the columns of the *Journal* during the past year) was proposed by Mr. J. Simpson (Woodall-Duckham), seconded by Mr. D. W. Ault (Lincoln), and carried unanimously.

The adoption of the accounts was proposed by Mr. R. M. Goodman (W. J. Jenkins and Co., Ltd.), seconded by Mr. Frank Allen (Colchester), and carried unanimously.

Mr. F. A. Rhead was elected district representative on the Council of the Institution; and Mr. A. W. Mather (Ipswich) and Mr. H. H. Redwood (Newmarket) were elected Auditors on the proposition of Mr. F. T. Brookes (Tottenham) and Mr. S. H. Stokes (Scunthorpe).

The Address

Mr. T. C. Battersby then read his Chairman's Address. This is given on later pages of this issue and referred to in our Editorial notes.

Mr. J. T. Haynes, Senior Vice-President of the Institution of Gas Engineers, at short notice owing to the absence of Sir Ernest Smith, proposed a vote of thanks to the Chairman for his address. He said Mr. Battersby had rightly stressed the importance of the unit manager of the small undertaking. His reference to a reduction in consumption recalled that in 1926 there was a temporary recession following the spurt after the first World War, and the present position appeared to be somewhat similar. The Chairman had dealt ably with costing and efficiency, but he had recognised that local conditions rendered strict comparisons impracticable unless undertakings were identical. The best they could do was to set a target for each undertaking and see how near each got to that target. The cost of applying to tiny village undertakings the methods which were suitable for the larger undertakings was out of proportion to their true value.

Mr. H. H. Redwood seconded the vote of thanks which was carried with acclamation.

On Monday evening the Chairman of the U.D.C. and Mrs. Jordan gave a reception and dance at the Grand. This was in every way a brilliant success. In the course of the evening Mrs. Battersby presented the cups and prizes won during the morning's competitions, as follows:

GOLF.—The Turner Cup to W. Morland Fox; the George Wright Cup to J. Simpson; Prizes to J. B. Clay, G. Ewart, S. H. Stokes, and E. T. Warren.

BOWLS.—Prizes to the following pairs: W. White and L. C. B. Williams; T. M. Jackson and W. A. Evetts; Sir John Stephenson and R. J. Gavin.

Large Scale Demand

The business session on the Tuesday morning was largely devoted to consideration of 'A Survey of Large Scale Demand in a Light Industrial Area' by Mr. G. E. Thomas, Divisional Industrial Engineer of the Watford Division, Eastern Gas Board.

Introducing this, the author said that one technical paper had stated that the survey was presented a few days before May 30; but he assured them that it had been saved for the present occasion.

The survey was a remarkable compilation of text, tables and graphs covering some 64 pp. of foolscap rotogravure, and we regret that present-day circumstances make it impossible for us to do more than publish (in a later issue) some pointers to its salient features. Among the eight speakers who took part in the discussion Mr. D. W. Ault remarked that everything that could be said on the subject had been said by Mr. Thomas; and all agreed that the survey would be a book of reference for a very long period.

Benevolent Fund

A donation of £30 to the Benevolent Fund of the Institution was proposed by Mr. K. R. Mortimer (March) and seconded by Mr. C. E. Grimwood (Sudbury). In acknowledging this, Mr. Haynes, as a member of the Committee of Management, referred to the high percentage of personal contributors from within the Eastern Section. He also appealed to all members to consider closely the advantages of entering into deeds of covenant.

The proceedings ended with the installation of the new Chairman, Mr. F. A. Rhead, and a warm expression of thanks to Mr. J. Hunter Rioch who, as with all very busy men, had found time to devote so successfully to the efficient and happy running of the Eastern Section.

Luncheon

At the luncheon which brought the meeting to its close the toast of the U.D.C. was proposed by Mr. Bernard Clarke and that of the guests by Mr. F. A. Rhead. In reply to the latter Sir John Stephenson said the meeting had been an unforgettable experience and he

wanted to thank the Eastern Section for everything, above all for their good fellowship.

Mr. Haynes, in proposing the toast of the Chairman, claimed that the record attendance pointed to the high esteem in which Mr. and Mrs. Battersby were held, and that the happy atmosphere which had always characterised the old Eastern Counties Association was preserved today. The recent St. Albans enquiry had shown Mr. Battersby to be a master of his profession, and he might perhaps be described as a typical product of the Colonel Woodall school which combined personality with high efficiency. He had received the approbation of what might be called his new Board of Directors. Finally, he had perhaps created a record by having been Chairman of the Southern and of the Eastern Sections at the one time.

News in Brief

Trade Statistics for March, 1952, issued by the Central Statistics Office in the Republic of Ireland, show imports of 33,533 tons of gas coal, valued at £205,234. 29,201 tons valued at £174,567 came from Great Britain. This brings the total of these imports for the first three months of 1952 to 75,849 tons, valued at £464,868, of which 71,517 tons valued at £434,201 came from Great Britain.

With an Aggregate of nearly 2,000 years of service 48 employees of the North Thames Gas Board, each with more than 40 years' service, were recently presented with long service awards by the Chairman of the Board, Mr. Michael Milne-Watson. Once again the family tradition of service was emphasised at this presentation ceremony for no fewer than 15 of those present had or still have relations working for the Board, or its predecessors.

Selected Parties of student nurses from the Archway Group of Hospitals have been attending a series of demonstrations on cookery for invalids given by the North Thames Gas Board at the Seven Sisters Road showrooms. The demonstrations have a real and practical value. The Board's home service adviser, Miss Rosemary Read, assisted by Miss June Farquhar, first demonstrated special egg dishes and after the demonstration the students were divided into groups and each individual then cooked one of the dishes previously prepared by the home service advisers. This is part of an extensive educational programme which has been organised for this group of hospitals by the Northern Divisional representative, Mr. A. J. Weller, in co-operation with Miss Ethel Whitton, Home Service Organiser. Film shows, lectures, works visits, and these cookery lessons have all been part of the programme provided for the personnel of the hospitals.

NEW COKE OVENS AT FORD WORKS

Coppee Plant Inaugurated at Dagenham

ON Thursday, May 29, Sir Rowland Smith, Chairman of the Ford Motor Company, Ltd., lighted the first of the new battery of 48 coke ovens which will replace the old coke oven plant put into operation at the Ford works, Dagenham, 18 years ago. Sir Rowland, in a pleasantly informal speech, said that when the old plant was started the pessimists said it would be a failure; time had proved them completely wrong. Apart from a plant operated by their parent company in America it was the only one of its kind in the world. The output of the old coke ovens comprised 5,038,000 tons of coal carbonised, 3,702,000 tons of coke, 57,984 mill. cu.ft. of gas; 12,500,000 gal. of benzole; 37,500,000 gal. of tar, and 43,434 tons sulphate of ammonia.

The new ovens have taken two years to build and are of the latest Coppee underfired design capable of being heated by rich coke oven gas or lean blast furnace gas and are a distinct advance in design giving greater operating economies and control facilities.

General view of the new battery comprising 48 coke ovens of the latest Coppee design.

The nature of the site made it necessary for the whole structure to rest on piles which number in all 765—the piles being precast. The oven raft serves as a capping raft for the piles and is designed as a whole, monolithic with the pinion end and oven super-structure. The finished basement raft provides the working floor for operating the mechanism under the ovens, ample headroom being allowed.

The types of refractory bricks chosen for the ovens include silica, silica quartzite, and anti-acid bricks to give successively reducing expansion co-efficients where the changes of temperature are widest and most frequent during operation so as to minimise movement due to expansion and contraction. To prevent dragging of lower expanding materials situated below expanding brickwork, and to prevent the formation of cracks, the battery is provided with the Coppee patent steel rod and band system for controlling expansion, whereby large diameter rods are placed at each point where the composition of the bricks changes. The brickwork is, wherever possible, well insulated to reduce heat losses to a minimum.

The fuel gas distribution system is of the underfired type with accurate control of gas quantity to each separate vertical flue by means of specially designed cocks which can be accurately and quickly set and changed at will. Header pipes carry the gas at any controlled pre-determined pressure so that a change of supply through one riser pipe does not affect the supply through adjacent riser pipes.

Self-sealing doors of massive construction are provided on both the pusher and coke sides of the battery and the main cast iron door framing has detachable sections for holding the firebrick lining. The doors on the pusher side are provided with leveller doors of an improved design.

To cut down the loss of gas when charging the ovens and at the same time have a cleaner atmosphere and better working conditions for the operators, double collector mains—one each side of the battery—are provided with a connecting cross-over main coupled up to the existing suction main.

At the conclusion of the ceremony, Sir Rowland Smith and Sir Patrick Hennessy (Deputy Chairman) were presented with silver Aladdin lamps of modern design as a memento of the occasion by Mr. G. Mostart, of Coppee, Ltd.

Top Floor of the Edifice

Extended Work of the Gas Officers' Guild

THE sixth annual general meeting of the Gas Officers' Guild was held in the Bishop Partridge Hall, Church House, Westminster, on the Tuesday in Institution week, May 27, when Mr. J. F. Rust (Wales Gas Board) was elected Chairman in succession to Mr. F. Dawson (North Thames), who retired on completion of the maximum three-year period of office permitted under the constitution and rules of the Guild. Mr. E. O. Rose (Eastern) was elected Vice-Chairman, and Messrs. Kennedy Smellie & Co. (Epsom) were re-appointed Auditors. The membership was reported to be 1,221, and an appeal was made to area committees and individual members to endeavour to secure new members.

The sixth annual report of the Managing Council, presented by the Chairman, stated that there are still men, even among officers in the gas industry, who stand aside and let others win benefits which they are glad to accept. There are others who are not concerned that many in their profession are much worse off than themselves.

Good Relations

The Gas Council *as a body* appreciates the desirability and indeed the necessity of establishing good relations with all grades of staff founded upon recognised machinery whereby agreements may be made between them and the duly accredited representatives of employees. The top floor of the edifice has been built during the year under review by setting up the Senior Gas Officers' Joint Council. The whole machinery so established was described in the Gas Council's report for the year ended March 31, 1951.

The work of the Guild during the year has been considerably extended. Many individual cases have been brought to its notice in which assistance was sought by members and given. Regular meetings of the Senior Gas Officers' Joint Council, of the National Joint Council for Gas Staffs and of the Staffs Side of both Councils, have greatly increased the volume of negotiation to be undertaken. There are indeed so many problems of industrial relations affecting senior officers and professional staffs that have been brought by members to the attention of the Managing Council that it has not yet proved possible within the Joint Council to resolve more than a few of them. The work that lies before the Guild is immense and in the field covered by the Senior Gas Officers' Joint Council is all the greater because so often area boards have set up their own terms and conditions of employment before bringing the Joint Council into existence.

Difficulties Resolved

The relations of the Guild with the Gas Council and area boards continue to be excellent. The legitimate rights of members are watched and the Guild, when necessary, takes action to protect their legal or moral rights. Difficulties are generally resolved by friendly discussion and in this most area board chairmen have been helpful and co-operative.

The Chairman, Mr. F. Dawson, completes the three-year period of office allotted as the maximum under the Constitution and Rules of the Guild. He succeeded Mr. Currier at a time when wise and energetic leadership was needed; the Gas Council and area boards were about to be set up and a new set of conditions introduced. The Guild owes to Mr. Dawson a debt of gratitude for his inspiration and leadership in the face of disappointments and opposition from without. That the Senior Gas Officers' Joint Council has been successfully initiated and bids fair to work smoothly with good will on both sides is a tribute to his patience, courage and wisdom. Although he retires from the Chair, your Council hope that they will continue to have the help of his counsel in their deliberations.

Area Branches

Thriving area branches now exist in all areas of the country except North Thames.

The membership of the Guild at March 31 was 1,221. During the year there were enrolled 34 new members; 27 of those who resigned had retired from active service or left the industry, and the Guild also lost four members through death.

The National Joint Council for Gas Staffs negotiated two salary increases during the year to meet the rising cost of living. Increases awarded in May, 1951, varied from £20 a year for those in A.P.T. Grade 1, to £50 a year for the top grades 7 to 12. These increases had effect from January 1, 1951. They apply to the salaries of all employees within the purview of the N.J.C.G.S., including those in receipt of so-called 'personal allowances' or payments in respect of 'better conditions.' The second increase was obtained in December, 1951, and (in the A.P.T. grades) varied from £5 a year for juniors in Grade 1 to £25 a year for Grades 7 to 12. The employers' side insisted that these increases should apply only to graded salaries. Therefore those officers who have been so graded that their grade salaries are appreciably below their actual remuneration received no increase. This omission has been the cause of much dissatisfaction.

Appeals on Grading

Grading, particularly in one area, caused widespread dissatisfaction and led to some hundreds of appeals being lodged. An important activity of the Guild has been to assist members to prepare their appeals against grading under the N.J.C.G.S. scheme, and to represent them at the hearings. In the majority of cases, the grading appealed against was not confirmed. This service has been given without any cost to the members concerned.

Prolonged negotiations resulted in the setting up on May 30, 1951, of a Senior Gas Officers' Joint Council for purposes which include among others the negotiation of terms and conditions of service of all officers in receipt of salaries above those covered by the N.J.C.G.S. For convenience, those covered by the Senior Gas Officers' Joint Council will be described as senior officers.

Cost of Living

This Joint Council is limited by its constitution to 30 members, 15 from the Gas Council and 15 from the officers' side, of whom 10 are nominated by the Gas Officers' Guild and five by the National Association of Local Government Officers.

Immediately after the formation of this Joint Council, the officers' side drew the attention of the Gas Council representatives to the then recent award of a cost-of-living bonus to staff within the purview of the N.J.C.G.S., and asked that an equivalent bonus should be given to all those coming within the S.G.O.J.C., the matter being regarded as appropriate for immediate action in this manner rather than by the more lengthy process of negotiation. All the area boards except the North Western are understood to have granted bonuses to their senior officers in accordance with this request. The amounts varied, but were generally £50 a year and were frequently restricted to those in receipt of salaries below £2,000 a year.

Dissatisfaction has arisen in certain parts of the country over grading. A number of senior officers were graded by fixing the salary deemed by the area board to be appropriate to their posts, the balance of the actual salary being then designated by the board as a personal allowance by virtue of the 'better conditions' clause in the N.J.C.G.S. agreement. This has adversely affected officers in various ways, in addition to giving the impression that they were paid more than the rate for the job.

Right of Appeal

For example, the agreed annual salary increases were made inapplicable by a grading on the top step of a very low grade, or were made purely theoretical by a grading so low that the increments merely had the effect of reducing the personal allowance. Low gradings made the negotiated general increase ineffective. Senior officers have been affected in that some whose salaries were above the maximum to which the N.J.C.G.S. agreement applied received notices by which their board purported to 'grade' them under that agreement.

As the result of representations made by the officers' side, the board undertook to withdraw such 'gradings.' It has been

established that in such cases, senior officers have the right of appeal to machinery—*i.e.*, the Senior Gas Officers' Joint Council, which would have covered them if they had not been graded. The Guild has maintained the view that where grading is applicable area boards should apply the grade that is appropriate to the duties and responsibilities involved; and that an officer should remain entitled to receive the rank and conditions of service appropriate to the total salary he received from the board concerned.

The Guild has taken up the question of the extent to which an officer's invention is, or should be, his own property. One area board required its officers to sign an agreement that if they produced any invention capable of being worked in connection with any part of its business, the patent should be surrendered for the exclusive benefit of the area board.

The legal position appears to be that in the absence of an agreement to the contrary, the excepting officers engaged specifically on work leading to inventions (*e.g.*, research men) and certain employees holding special positions of trust (*e.g.*, a managing director or area board chairman) inventions belong to the employee who makes them, in much the same way as copyright. The board in question has agreed to re-consider the matter.

Among other matters which the Guild has put forward for consideration by the Senior Gas Officers' Joint Council are the arbitrary substitution of taxable cash payments in place of tax free emoluments in kind, and the reduction of statutory compensation payments in consequence of the negotiated cost-of-living increments.

Emoluments in Kind

The termination of emoluments in kind appears, in some cases, to constitute a breach of contract and leads to financial hardship in various ways. The cash payments, after deduction of tax, are substantially less than the cost of the coal, gas, or other emoluments, and as prices rise the inadequacy increases. Also, the cash is treated as a personal allowance, with the result that in some cases the board avoids payment of the latest negotiated general increase, and the appropriate annual increments.

Over 100 members received individual advice and assistance on legal and other problems on which they consulted the Guild. These included a number of compensation claims by members dismissed as redundant. Some have been satisfactorily agreed with the boards concerned and others await decisions by the appropriate tribunals.

GAS STAFFS AND NALGO

Another Busy Year

THE annual conference of the National Association of Local Government Officers opened on June 10 at the Winter Gardens, Margate, when the Mayor of Margate welcomed the 1,400 delegates, representing the Association's 212,000 members. On the previous evening, a large gathering had attended a civic reception given by the Mayor of Margate. On June 9, Mr. George Newman, the Association's Organising Officer for Gas Staffs, addressed a meeting at the Winter Gardens of delegates representing members in the gas industry.

Mr. Newman said the National Joint Council had had another busy year. In December, it agreed a further increase in salaries ranging from £5 to £25, following the earlier increase which took effect on June 1, 1951. While the employers could not accept the staffs side's claim in its entirety, the effect of the second increase was to put the scales for gas staffs generally comparable with, and at some ages slightly better than those applicable in the local government and electricity services. Since then, colleagues in local government and electricity had claimed further increases, but had met stiff opposition.

A Black Spot

The black spot in the gas industry award was their inability to persuade the employers that the increase should be paid to officers receiving protected salaries. The staff side was most concerned with this question. It appeared that many officers were being denied the increase merely because, as a result of extra payment for merit or responsibility, they were not within the salary scales in the agreement.

At the meeting of the National Council in March, 1952, the staffs side raised this aspect and it was agreed that any such cases should be taken up at area board level. This approach might reduce the problem, and he noted from the minutes of the South Eastern Area Joint Council that 45 out of 52 employees who had not received the increase would now qualify to receive it. The fact remained, however, that the employers had not conceded the principle of the entitlement of the officer on a protected salary to the cost-of-living bonus, and the staffs side would pursue the problem.

Payment for Overtime

Another major agreement was on payment for overtime. Although the employers had claimed that review of the old bonus scheme was outside the scope of joint negotiation, and the staffs side had been compelled to threaten to go to arbitration, agreement was reached in March, 1952. Apart from the major defect that technical staff were excluded from its provisions, the scheme represented a much improved and reliable basis for the payment of overtime and had been welcomed.

The employers were adamant about the exclusion of technical staff, contending that their job had always entailed the necessity for extra duty to preserve the continuity of the service, and that this was recognised in the grading of technical posts. There was provision in the new agreement for remuneration of technical staff working overtime in special circumstances, and one could not overemphasise the value of the appeals machinery to ensure that they were graded adequately for their responsibilities.

An understanding had been reached in the National Joint Standing Committee for intermediate grades, that whenever any major change occurred in the rates of pay or service conditions of the manual workers or staff, an early meeting of the committee would be called to consider the impact of the change on the intermediate grades. Although this meant, generally, that these grades were dealt with after staff or manual workers, it had involved no penalty, and the last increase, though not agreed until January 30, was made retrospective to December 30, 1951. The committee, therefore, followed a programme similar to that of the national council.

The Senior Gas Officers' Joint Council was formed last year and possibly its most important activity had been the holding of ballots in which officers were asked to say whether they wished their salaries and conditions of service to be negotiated by the Council. Generally, senior officers had preferred collective negotiation to personal and individual approach to their boards. This was a hopeful sign. The Council was also considering the setting up of area joint councils, the payment of cost-of-living increases, and the formulation of sick pay and holiday schemes.

Pension Scheme Delay

Long delay in the publication of the staff pension scheme was deplored. It now awaited the sanction of the Minister, and the Gas Council knew of the growing impatience of staff over the delay.

Apart from one or two areas where numbers of appeals were outstanding and delay was causing unrest, much progress had been made in dealing with appeals. Some areas were to be congratulated on the intense effort made by employers and staff sides together to keep abreast of the situation and make a good contribution to industrial relations.

Generally, the hard work of setting up the joint consultative committees had been completed and, already, some useful business had been transacted and valuable contact made. It was now up to the staff to ensure that these committees were live and vital and to seize the opportunity they offered to make a useful contribution to good relations and efficiency in the industry. Most area boards had evolved an education scheme and in some areas staff had taken advantage of the facilities available. Every branch should interest its members in the value of participating in these educational schemes.

A Series of Lectures has recently been given in various parts of the country by Mr. D. C. E. Poole, Technical Director of George Wilson Gas Meters, Ltd. The first was to the Alyesbury and District Group of the Southern Gas Board; then to the Bedford Group of the Eastern Gas Board, and finally to the Peterborough Group of the same Board.

Consumer Representation in Nationalised Industries

ON the motion for the Whitsun adjournment on May 30, the Parliamentary spotlight was turned on the nationalised industries' consultative councils, when the present set-up came in for some outspoken criticism and was compared, to its disadvantage, with consumer representation as it existed and still exists in the public services owned and managed by local authorities.

Opening the debate, Mr. I. J. PITMAN (Bath) made it clear at the outset that public ownership was not in question; the issue was that of public ownership managed by a public corporation, where the consumer representatives were subservient to and at the mercy of the management which, generally speaking, used them to placate criticism by consumers—instead of being used by consumers to criticise management.

Secretary's Position

Enlarging on this point, Mr. Pitman reminded the House that the chairmen of consumer councils received a salary paid by the management. Secondly, the secretary was seconded by the board, and vetoes had been put on the independent selection and appointment of its own secretary by the consultative council itself. Thirdly, the pay, pension, promotion, and future career of the secretary were very much at the discretion of the board. Fourthly, very often the two bodies—the board, which was the management, and the consultative council, which was the critic—were living and working cheek by jowl in the same town and the same office.

On the question of the council being at the mercy of the management, Mr. Pitman observed that, after all, knowledge was power. The technicalities of the subject made the expert dominant, and while the people from the board were all experts, those on the council rarely had sufficient knowledge to tackle the expert. The information on which the council had to work in criticism of the management came only from the management itself. The management could select the information sent out, and the timing of its circulation was often such that the consultative councillors had no time to prepare their case with the information provided. Finally, the initiative was open to the management to use the council, much more than the initiative lay with the council to criticise the management and keep it on its toes to serve the consumer.

No Power to Follow Through

Then, continued Mr. Pitman, the council had no power to follow through; it could only recommend. True it could appeal to the Minister; but in the field of prices the Minister was entirely powerless to deal with these area boards because the boards were under statutory duty to make ends meet. He then made the point (which, we may say, is not generally applicable to the gas industry) that council meetings were usually secret and that it was exceptional for the main business to be conducted in public with the Press admitted. As regards his contention that the councils generally tended to placate criticism rather than be critical, which was their function, he made a specific accusation in this respect against the South Western Gas Consultative Council.

Those were the charges against the councils as they were now working, said Mr. Pitman. Nobody, he thought, could say that the gas engineer of the local authority gas undertaking was dominant over the council or city corporation; yet it was being said generally that these consultative councils were acting as a

IN PARLIAMENT

stooge by which the management could have an effective and, be it noted, numerous and expensive public relations officer for gaining the acceptance by the public of what they had done, and gaining advance acceptance of, and commitment to, what they intended to do.

He would claim that the public was universally extremely dissatisfied, particularly over prices. For instance, in Bath the price of gas had gone up 273% since before the war. The public generally hoped that nationalisation would lower prices, and they felt that a basic source of the trouble had been that the consumer was not being adequately represented.

We may mention that Mr. Pitman's frequent references specifically to the gas industry were not fortuitous. He has some considerable knowledge of the industry, having been for many years a Director of the former Bath Gas Company.

The Remedy

Following his criticisms, Mr. Pitman made certain suggestions—first of which that it must be a policy decision that the council was to be on the side of the consumer and not on the side of the management; that it should be advocate for the consumer against the management, not for the management against the consumer. Secondly, it must discontinue the present loyalty of the chairman and secretary to the board and to the management which it was there to criticise. It must be loyal only to the consumer.

Then a central staff office must be set up to serve consumer councils generally—to provide all the information and help which were essential for criticism. And local authorities should be brought more into consumer representation.

'We have a soluble problem,' said Mr. Pitman in conclusion. 'There are, I believe, lots of skeletons in the cupboards of these industries, and the frequent desire of the consultative councils to shut the door on them and not to have them examined is evidence that they are there. These councils will never do their job of satisfying the public that justice has been done until they open those doors and admit the public and the Press.'

The Member for Bath was followed by Mr. JAMES MACCOLL (Widnes), whose claim to be an authority on the subject of consumer councils was that he had been purged from two of them. In speaking on this subject, indeed, he felt slight embarrassment in that he was rather like the mother who claimed to be an authority on the upbringing of children on the ground that she had buried 10 of them.

The Consumer's Influence

He had little quarrel with what Mr. Pitman had said except that he thought him unfair in stating that before nationalisation the consumer was in a better position. Mr. MacColl suggested that the consumer was in an incomparably better position today. His impression was that under nationalisation, except where previously the supply was by a local authority, the industries were more susceptible to the views of individual consumers. Public dissatisfaction with consumer councils arose from the fact that in the present situation there was not very much that a consumer council could do. A good many of the complaints which came before the councils were from individuals who wanted some special service which required a lot of money to provide. The problem facing the council and the industry was whether extra money should be spent to meet the idiosyncrasies of an individual consumer at the expense of the general community.

Mr. MacColl thought there was very reasonable liaison in the gas and electricity consumer councils between the local authority and the board. It was very much better than in the case of the coal consumer councils, which were altogether too centralised and not sufficiently local. He was not optimistic about the possibilities of a very easy solution to the problem. He did not share the optimism of the hon. Member for Bath. He was inclined to think they should abandon the whole idea of consumer councils and divide the work between the local authorities and a Select Committee of the House.

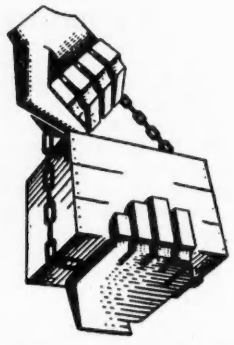
Multi-Purpose Councils

But if they maintained consumer councils he thought they should be multi-purpose. There was no need for a gas and an electricity council. They wanted one consumer council representing the interests of the consumers of all kinds of fuel because, after all, those fuels were complementary. In that way they might get an organisation which could have an independent staff—and that was a vital matter.

The debate, which was running to time schedule, had to be cut short, and at this point the Parliamentary Secretary to the Ministry of Fuel and Power (Mr. L. W. JOYNSON-HICKS) rose to reply. The whole question of these consultative councils, he said, was in the experimental stage, and the best way to get an experiment to work well was by revealing problems and difficulties and discussing them. There

(*Concluded on p. 778.*)

Mechanical Handling in 1952



The Mechanical Handling Exhibition and Convention, which made its third appearance at Olympia from June 4 to 14, must now be regarded as one of the regular events in the industrial year. Its growth has been remarkable, the floor area of the exhibition being over four times that of its first showing in 1948, and there is every indication that it is serving what must be considered a comparatively new force in British industry. The exhibition and convention were organised by the journal* Mechanical Handling, *with the co-operation of several associations. For the gas industry there was plenty of interest, and the following review is intended to emphasise the exhibits of those firms whose products serve the industry.

Conveyors and Tipplers

IT is much to the credit of exhibitors in this field that well over half of the many different types of conveyors displayed were in action. In general, improvements effected were in details rather than in major principles, but there was discernable a number of developments indicating a steady trend towards improved efficiency in this type of plant.

Robert Cort & Son, Ltd., exhibited an automatic screening, weighing and bagging unit which was particularly applicable to the loading of coke into bags and had been developed for use in the gas and coke industries. It consisted of a single-deck oscillating screen which would be located beneath the outlet of an overhead storage bunker, to debreeze or re-screen coke prior to loading, the screened material being delivered into a chute discharging into the feeder incorporated in an automatic bagging and weighing machine. This firm also showed a single-gate rotary gas valve which had been developed primarily for gas distribution services and works use in the gas and coking industries, a heavy-duty 'Super-Spartan' balanced reciprocating screening-conveyor, and a 'Cæsar' heavy-duty single-deck balanced oscillating screen, and gas and liquor valves.

A considerable range of conveying equipment and accessories was shown by the **Ewart Chainbelt Co., Ltd.,** including chains, buckets, sprocket wheels, conveyors and elevators. Exhibited on this stand was a representative range of malleable iron and fabricated steel chains for elevators, conveyors and power transmission, sprocket wheel sand elevator buckets, and a series of medium-duty transmission drives in operation, employing representative sizes of malleable iron and fabricated steel chains. Samples of troughing idlers for belt conveyors and gravity roller conveyors were supplemented by photographs of various mechanical handling plants designed, made and erected by this firm. They also showed a working model of a handling plant for bulk material, and a working model showing a sectionalised building in which was installed a finger tray type elevator for packages, feeding to a discharge grid on the upper floor.

Electro-magnetically operated vibrating equipment is the speciality of the **Fraser & Chalmers Engineering Works,** whose stand proved to be one of the eye-catchers of the exhibition. This was due to a circular, electro-magnetically-operated vibrating trough, which had been made up into a screening unit. This separated a mixture of granules into three groups by size, each group being differently coloured for easy identification for the purpose of the demonstration. These were then fed to a spiral elevator by further vibratory conveyors arranged as spokes to the hub formed by the elevator. This elevator, which was in fact a cooler for use in a plastics factory, then elevated the material and, from the top of the spiral, it was finally returned for re-circulation. A second circular table, comprising three separate troughs demonstrated a novel system of reversing the flow of a material by electro-magnetic means in conjunction with half-wave rectifiers.

A recently-developed straight, reversible conveyor, 20 ft. long by 15 in. wide, was shown. Previously, the new principle of reversing the material on a vibratory conveyor by electrical means had been demonstrated only in model form. The machine exhibited, however, was capable of handling material in either direction with an output comparable with that of an equal-sized standard vibratory conveyor. A new type of electro-magnetically-operated vibratory conveyor, demonstrated how a continuous trough can convey material both in a straight line and around a radius. The range of exhibits was completed by standard examples of a foundry shake-out, a vibratory screen and feeders, and bunker vibrators.

A remarkable range of both floor and overhead conveyors and hoists was exhibited by **Geo. W. King, Ltd.,** the outstanding item being a model showing how selection on an overhead conveyor can be operated by a Hollerith punch card system. Other exhibits included overhead chain conveying systems with new light type power-pulled and Dual-Duty conveyors, a working floor conveyor with interlacing slats, a working range of electric chain pulley blocks, a Marvex electric block working on an overhead runway and with automatic hoisting, lowering and traverse from a remote control point, hand-operated pulley blocks, overhead runway equipment featuring King supertrack, switches and trolleys, Safelec system of track electrification, a working underslung latching crane, and a standard wire rope crane crab.

On the **Mavor & Coulson, Ltd.,** stand an M & C sectional belt conveyor was shown in action. This is easy to install, extend and move, even on rough sites and by rough labour. Idler rollers were exhibited cut in section to reveal how running is kept easy, in spite of attack by grit and wet, in some cases for 20 years. The self-contained driving gear had snub pulley, belt cleaner, and hold-back, and could transmit 40 h.p. (when belt speed was 450 ft./min.). A model of the self-tensionng gear explained how it automatically adjusted slack-side tension to be just as much as required to handle the load on the belt at the moment, thus increasing belt life.

The industrial drive heads manufacfactured by **Hugh Wood & Co., Ltd.,** range from 5 h.p. to 50 h.p., and sizes from 5 h.p. to 30 h.p. are made in similar construction, comprising a self-contained head with all the driving mechanism aranged on a common bedplate. They exhibited industrial drive heads type 5N and 25W with motor, a 5GB/60 drive head with motor, a pulling jack tail end, 24 in. belt—3 ft. T.U.; screw type tail end 3SS—2 ft. T.U.; standard 3FT section—idlers 4 ft. 6 in. pitch; 3MFT standard section, idlers 4 ft. 6 in. pitch; 3DFT section for 26 in. belt; 3EFT section for 24 in. belt; and a 3FT standard section with rubber-covered abrasive idlers of 1 ft. 6 in. pitch.

The main exhibit on **International Combustion, Ltd.,** stand was a standard Beaumont skip hoist with a skip bucket of 40 cu. ft. capacity and an 18 in. × 24 in. Simplex loader. The bucket ran up an inclined track, tipped, returned to the bottom position where the loader operated automatically and, after a predetermined time interval (for filling), the bucket again ascended, disengaging and automatically closing, the loader. There was also a model of a gravity bucket conveyor on this stand.

The principal exhibit on the **Strachan & Henshaw, Ltd.,** stand was a full-size working example of the 'Rotaside' wagon tippler handling a full-size wagon. Working models were used to demonstrate other types of tippler, such as the long 'Rotaside' for overseas double bogie wagons, the new 'Whitehall' rotary tippler, the mobile tippler for use on spoil dumps, and the 'Turntipper' which is a combination of turntable and end tipper. The firm's dust trapping system for use with their tipplers was also shown in model form. Further models showed the working of the 'Angle' hoist, a form of skip hoist for elevating and delivering bulk materials to a range of bunkers; the 'Flushdecker,' a device for levelling up a lorry deck with a loading platform and maintaining it thus during the loading or unloading operation; and the

'Beetle,' a system of marshalling railway wagons. The beetle is a shallow, compact box which runs on a pair of auxiliary rails just inside the wagon rails, and has a pair of projectable and retractable roller arms. When projected the roller arms engage with the treads of the wheels and with the heads of the rails. The beetle is hauled backwards or forwards by means of a rope or chain which is accommodated centrally between the rails and is always just taut, being endless. It makes possible, for the first time, the control by one man of all operations connected with the receipt, unloading, and despatch of wagons.

A.C.E. Machinery, Ltd., exhibited a standard self-contained mobile elevating de-breezing, weighing and bagging unit, capable of dealing with 25 tons of coke, weighed and bagged in the hour. Various winches, geared and friction, were also shown from the standard range for petrol, diesel or electric drive, including a 5-ton winch specially designed for operation from a vehicle power drive. The A.C.E. electric capstan winch shown was an extremely robust machine, which could be arranged for loads of from 1 to 5 tons at speeds to suit requirements. The transporter hoist and the 'Midget' winch were shown, the latter adapted for duty as a sack hoist, and the 'Humdinger' immersion type vibrator with petrol and electric drive.

Cranes and Hoists

It is probably in this field of mechanical handling that the most rapid improvement in performance is taking place, and the exhibition included a number of new models.

There was, for example, the new Jones KL 66 crane, one of the range manufactured by **George Cohen & Co., Ltd.** The rated maximum load of 6 tons (no more than 66⅔% of the actual tipping load) is taken at 9 ft. radius and can be hoisted at speeds up to 40 ft. per minute. Lighter loads up to 2 tons can be hoisted at 120 ft. per minute. Jibs of various lengths up to 60 ft. are available. A differential is employed in conjunction with four -wheel drive. The KL 66 can be supplied as a mobile crane on pneumatic-tyred restrictor wheels, or on crawler tracks; it is also available on a rail chassis, or lorry mounted, or on a fixed base suitable for mounting on a platform or wharf.

Other Jones cranes on show included the well-known KL 44, and the KL 22 and KL 15, and the exhibit was rounded off with a display of winches, gantries, pulley blocks, etc.

The type 'R' mobile crane, shown by **R. H. Neal & Co., Ltd.,** was one of the firm's latest models. This has a maximum rated lifting capacity of 10 long tons without the use of jacks or outriggers, which, it is claimed, makes it the largest completely mobile crane produced in this country. It was shown with a 75 ft. long jib, which can lift 2 tons at 30 ft. radius up to 70 ft. high, and fitted with a double-rope coal grab. The crane was mounted on eight heavy-duty pneumatic tyres, driven by a diesel engine, and fitted with power-assisted steering. The main gearing was totalling enclosed and running in oil baths. Also exhibited was the type 'GM' mobile crane, which is of 15 cwt. maximum capacity, and was shown with two of its standard front-end equipments, i.e., a 20 ft. lattice jib, and a 40 ft. telescopic extension mast. These two machines were representative of the full range of Neal cranes, covering capacities from 15 cwt. to 10 tons.

An interesting mobile crane was exhibited by **F. Taylor & Sons (Manchester), Ltd.** Powered by a diesel engine, this crane had all hydraulic actuation, with simplicity of control. Several auxiliary attachments could be used in connection with the machine, such as hydraulic grabs, inspection platforms, jib extensions, pole lifters, and fork lift arms. An interesting point is that the firm will consider the manufacture of specialised attachments to suit purchasers' individual requrements.

Thomas Smith & Sons (Rodley), Ltd., exhibited their 5-ton locomotive crane, which is self contained and can operate anywhere for long periods with the minimum amount of attention. The superstructure in which is embodied the power unit and machinery is fully revolving on a live ring of tapered rollers. Power is smoothly transmitted from the diesel engine to all motions through a hydraulic coupling and chain drive. The efficient weather protecting house affords ample vision for the driver while allowing easy access for maintenance. The power to various motions is supplied from a diesel engine of 70 b.h.p. and is fitted with electric starting equipment. Lifting capacities range from 5 tons at 16 ft. radius to 1 ton at 40 ft. radius.

Electric control equipment for mechanical handling equipment in wide variety was exhibited by the **British Thomson-Houston Co., Ltd.** A working demonstration of 'Stacreep' crane and hoist control was an impressive feature of the stand, and there were a number of industrial electric motors exhibited, including stator and rotor units for 'building-in' a Vaughan portable hoist showing the compact arrangement that can be achieved by their use. There were also numerous fractional horsepower motor. Exhibits of electric control gear included contactor starters, controllers, pressure switches, push-button switches, limit switches, etc.

It may be recalled that B.T.H. designed and manufactured all the main electric equipment for the world's largest walking dragline—Rapier type W1400, which is now in operation at Stewarts and Lloyds' ironstone quarries at Corby, Northamptonshire. The electric equipment includes some 3,000 h.p. of electric motors and a complete Ward-Leonard power control scheme, and this equipment was shown on the stand by an attractive and ingenious display.

Lifting Trucks

The principal exhibit on the stand of **Crone & Taylor, Ltd.,** was a 40 ft. mobile stacker capable of stacking 100 tons of 2 in. stone per hour to a height of 20 ft. Power-operated height adjustment is provided, enabling the machine to be raised from 7 ft. 6 in. to 24 ft. in 55 seconds. Also shown was a 25 ft. package stacker capable of handling bags and boxes up to 2½ cwt. at the rate of 60 tons per hour, and a 15 ft. 'Snipe' package stacker which stacks 2 cwt. bags or boxes up to 10 ft., fitted with hydraulic height adjustment. Another interesting exhibit was a mobile bag filler, which will fill bags at the rate of 10 tons per hour; the machine can be pushed anywhere by two men, and running costs are as little as 2d. per hour. Mobile and static disintegrators were shown, with a capacity of 15 and 5 tons per hour respectively, and an 18 ft. tubular framed belt conveyor with 18 in. wide belt and geared motor drive.

Power Jacks, Ltd., showed a range of hydraulic equipment, prominent among which was the Newton Hydratruck, which was publicly exhibited for the first time at the last Mechanical Handling Exhibition. A development of the Hydratruck specially adapted for handling laminated sheets of material such as paper, mill board, or metal sheets was on view. An important development not previously exhibited was a system of jacks in synchronised pairs, in which a pair of jacks working on a common hydraulic circuit, extend at a uniform rate regardless of the load on each jack. This new system known as 'Synchrojacks' has opened a wider and simplified field of application for hydraulics, so that it is now possible to fit a pair of jacks to a lifting table or a pair of independently connected arms, and to ensure an even lift with an unevenly distributed load.

Mechanical Shovels

A veteran of 30 years, the Chaseside shovel, manufactured by the **Chaseside Engineering Co., Ltd.,** appeared in another new guise. This was the 'Major' mobile shovel, which apart from incorporating the new Fordson tractor engine as the power unit, offers many other interesting improvements. Perhaps the most important of these is the introduction of hydraulic winch control, which has effectively removed any criticism of this type of machine requiring a degree of manual effort for its successful operation. In effect, the new Chaseside shovel combines the virtues of both systems of mobile mechanical shovel operation, but has succeeded in avoiding the disadvantages of either. On the one hand, the retention of cable operation will continue to allow the machine to retain its unique advantage of being able to work on really tough jobs normally reserved for very much bigger and more expensive equipment. On the other hand, hydraulic control of the winch now provides the greatest possible ease of operation so that increased output, even under the most difficult working conditions, should be a practical possibility.

Other Exhibits

The **British Tyre & Rubber Co., Ltd.,** showed samples of belting for standard and special applications, including the recently introduced B.T.R. 'Pitmaster' brand for underground work and the B.T.R. 'Gripface,' for lifting bulky goods up abnormally steep inclines. Also shown was B.T.R. industrial hose for the conveyance of fluids, and a demonstration of B.T.R. sand and gravel hose showing how economies can often be effected by following acute bends with short lengths of hose. B.T.R.

'High Test' transmission belting and fully-corded V-belts were also shown, and 'Long Life' impact rubbers.

Conveyor and elevator belting was also a feature of the **Goodyear Tyre & Rubber Co. (Great Britain), Ltd.,** stand, supported by a display feature which demonstrated how quality control is applied during their manufacture to ensure a consistently high standard of product. A roll of coal flow conveyor belting was shown with a selection from the Goodyear range, each carrying a load typical of its special uses. Transmission belting and industrial hose was also shown.

Specialists in aluminium alloy ladders, **John Kew & Co. (Manchester), Ltd.,** demonstrated how the method of construction ensures a rigid fixing of the rung into the stile section. The rungs are fully serrated giving a high safety factor in use. The range includes: Tower, standard, extension step, ships', archive, library, tree climbing, universal, cat, fire brigade hook, brewery, pole and roof ladders.

The Rawlplug Co., Ltd., exhibited its full range of products, including Rawlplugs—the fibre wall plug which is made for all sizes of screws from No. 3 for light wiring to No. 30 which will take a direct load of 4 tons—Rawlbolts, which are metal expansion bolts which do not need grouting in, and bolt anchors for fixings in wet places. Rawltools, stardrills, tubular boring and wall boring tools, durium carbide-tipped rotary drills, triform drills, etc., were among other devices shown, in addition to the hand-operated mechanical hammer and the new drill hammer which will convert an electric drill into a percussion tool.

Lastly, **Rozalex, Ltd.,** were strongly represented, demonstrating how their products will produce a barrier giving a high degree of protection against the more severe types of skin irritants such as acids, alkalis and solvents. A great deal of progress has already been made in this direction by the introduction of Rozalex No. 8, a liquid-resisting barrier preparation which is now used extensively in the chemical manufacturing industry and the various industries whose processes involve the use of chemicals.

Gas Council Films

THE value and interest in films as an educational and instructional medium can be gauged by the steadily increasing audiences who view gas industry films. During the past year, 16,000 films were issued and shown to an audience of over three million. Half of these were issued by the Gas Council, the remainder by the area gas boards.

One of the latest films, 'Method and Madness,' which features Richard Hearne in his famous rôle of 'Mr. Pastry,' has within a very short period reached a bigger audience figure than any previous gas industry film. Another new field has opened up with the showing of educational films to the Saturday morning children's audiences, 'The A.B.C. of Gas,' for example, has already been viewed by three million children. The B.B.C. are also using these films on television.

Steady progress is being made in the distribution of gas industry films, particularly in the field of the 16 mm. film, where there are 10,000 such projectors owned by schools, local authorities, industry, churches, hostels, youth clubs, film societies, women's organisations, technical institutes and the armed forces, etc., and it is anticipated that an audience of six million will be reached within the next two years.

SCOTTISH (WESTERN) JUNIORS AT STIRLING

Members of the Scottish Junior Gas Association (Western District) on May 17 visited Stirling gasworks (the works of their President, Mr. J. F. Wilson, Assistant Manager and Production Engineer, Alloa-Stirling sub-group). Mr. W. M. Gledhill, the Manager, welcomed the visitors, who were conducted in parties round the works, considerable interest being shown in new plant developments. The party was then taken to Alloa gasworks to inspect the 2 mill. cu.ft. spiral-guided gasholder almost completed, and the Power-Gas Corporation automatically operated carburetted water gas plant of 1 mill. cu.ft. per day recently completed. On returning to Stirling tea was served at Millars' Restaurant, after which the President handed Mr. A. McInnes (Dumbarton), the Past-President's Medal. Mr. McInnes presented Mr. Colin Campbell (Ayr) with the Silver Medal of the Society of British Gas Industries for the best technical paper to the Association during 1950-51.

CONSULTATIVE COUNCILS

Southern Cinema Gas Price Protest

PART of the June meeting of the Southern Gas Consultative Council at the Grand Hotel, Bournemouth, on June 4, was held in committee and part in public. The chief item on the public portion of the agenda was the receiving of a deputation from the Hampshire and East Dorset branch of the Cinematograph Exhibitors' Association, consisting of Mr. G. Bravery (Mayor of Poole), Vice-Chairman of the branch, and Mr. H. H. C. Mitchener, Secretary, to protest against increases in the price of gas. The outcome was that the Council decided that it could recommend no price alteration in favour of cinemas or any other industry.

Mr. Bravery (owner of six cinemas) said they had an agreement with the gas company before nationalisation whereby they had a certain discount. But in April last year, they received a circular about a tariff that was already in force that did not give them the discount. Some of them had a 45% discount. Their industry could not go on as things were now with gas as heating. 'We ask you to ask the Southern Gas Board to recognise this so that we can have the discount we had before.'

Alderman J. W. Moore, Chairman, said that large consumers were given a considerable reduction in price under the new tariffs. If consumption was over 5,000 therms, the consumer paid 4d. per therm under the published rate. The exhibitors' previous discount had come off the published price.

The Gas Board had decided to stop this and similar discounts because they were unfair to the domestic consumer. Some comparatively small industrial consumers had also been getting a bigger discount than some larger consumers. 'I know your gas bills are bigger,' he told the deputation, 'but standard charges are higher due to increased costs.'

Mr. Bravery said his gas bill for one cinema had risen from £161 to £271 a quarter with removal of the discount. He said they would never have put in gas fittings if the discount had not been agreed.

Mr. Mitchener said Association members felt they had not had a square deal. They had had heavy expenses putting in gas fittings and now the price of gas to them had nearly doubled. Several had said they would rather lose the capital cost of the fittings and go without gas.

Mr. Moore asked: 'If we agree to reinstate this discount what can we say to the doctors, hoteliers and caterers who all had discounts before? The Board's decision to vary price with the quantity consumed was the fair one.'

Mr. Bravery: The old gas company used to go round to get business. You seem to me to be trying to lose business.

Mr. Moore: The old gas companies were in many cases supplying gas at an uneconomic price. Many of them showed a loss.

Mr. Bravery said it was 'disgusting' that they should put their prices up to a good customer, and then not tell him about it till afterwards.

Mr. S. J. Gale, of Bridport, said the hospitals were also 'kicking up' about gas prices. There was a Co-operative bakery that lost a halfpenny on each loaf sold because of the cost of gas.

Mr. R. W. Jones (Southampton) said: 'As far as I am concerned, if there is to be a gas reduction to one class it should be the old age pensioners.'

After the withdrawal of the deputation, it was proposed that the Council recommend to the Board that no alteration be made in price in favour of the cinema, or any other, industry, and that the Council reaffirmed support of the Board's policy.

An amendment was moved that the Board be asked to give further consideration to the deputation's protest. The seconder said: 'If these industries go over to other fuels, the Gas Board will go broke and this will be an obsolete industry.'

The amendment was lost and the resolution was carried.

Coal and Administrative Costs

Mr. C. King, Secretary, read a letter from the Ministry of Fuel and Power in reply to the Council's earlier resolution about the price of coal, quoting a statement from Sir Ernest Smith, Chairman of the Industrial Coal Consumers' Council, that no unreasonable advantage in price had been given to domestic or industrial coal users as against the carbonising industries.

Alderman Moore said that in the latest increases in coal prices the cost to the gas industry had been considerably more than that to electricity, but he questioned whether it was any good asking the National Coal Board to reduce prices in view of the fact that the Board had made a loss last year.

Replying to a comment on capital expenditure, Alderman Moore said it was hoped that gas would be produced more cheaply in new works. For instance, in the Isle of Wight all the present undertakings would be closed, and one gasworks would supply the whole Island. That involved capital outlay, but it would mean that the cost of production would be considerably reduced, and eventually it should mean a reduction in price. The Southern Gas Board had taken over a number of uneconomic undertakings. Portland gasworks would be closed shortly and the supply would come from Weymouth, which would also eventually supply Dorchester so that the works there would close.

Coke Sales in Small Lots

A Lymington member protested that it was possible to buy 28 lb. lots of coke from gasworks at New Milton and elsewhere but not at Lymington.

The Chairman said the Board had regarded coke sales in small lots as an emergency measure and was considering the possibility of stopping it throughout the area. The Council agreed to ask the Board to continue the supply of small lots at all its gasworks.

A Bournemouth member said he had received a letter from the Bournemouth Hotels and Boarding Houses Association saying that one of its members had protested about a charge of £2 by the Gas Board for assembling a large cooker.

The Council agreed to recommend that the Board should discontinue its charges for assembling such appliances.

Development in the Newcastle Division

IN a review of technical developments, Mr. J. E. White, Newcastle Divisional General Manager, told the Newcastle Consumer Committee that the new plant at Howdon was now in full operation and it was anticipated that the carbonising section of the plant would, on an average, yield 1 mill. cu.ft. per day more than the quantity averaged during the initial tuning-up period which covered the bulk of the preceding winter.

In addition to this extra 1 mill. cu.ft. per day, there would be an entirely new addition of 4 mill. cu.ft. per day from the carburetted water gas plant now near completion at Howdon, stated Mr. White. He also reported that there had been secured for the division a 2½ mill. cu.ft. per day water gas plant which was in process of erection at Elswick Works and which would also be in operation for the coming winter. These additions, coupled with improved purification facilities at North Shields, equal to an additional ¼ mill. cu.ft. per day, represented a total improvement of 8 mill. cu.ft. per day over the preceding winter.

It was therefore felt that even allowing for more severe weather conditions than those experienced last winter it would be possible to meet all requirements without having to resort to reductions in pressure. In addition to the 8 mill. cu.ft. per day there was a potential 1½ mill. cu.ft. per day to be obtained from the two manually-operated C.W.G. plants at the Redheugh Works, which it had not been possible to operate during peak load conditions in the past for technical reasons. These were in process of being overcome during the present summer.

Referring to distribution work in hand designed to assist in the supply position during the coming winter, Mr. White said that important alterations

were being undertaken in the Byker and Manors districts of Newcastle which had both given trouble last winter; in the supply to Gosforth generally; and to Ryton and the western extremity of the Division.

In Forest Hall and Gateshead, in addition to the re-laying of certain mains, considerable progress was being made in the supply to the new technical College. In South Shields and the coastal area generally important distribution work was in hand and already material improvements had been effected in the Harton area of South Shields; major schemes were in progress covering the Boldon Colliery area and the large new housing estates which had come into being in the area of South Shields and Jarrow.

Payment of Gas and Electricity Accounts at One Centre

At a meeting of the North Eastern Gas Consultative Council in Leeds on May 26, the present system of paying gas and electricity accounts at separate offices was criticised, and a resolution was carried asking the North Eastern Gas Board to see whether arrangements could be made for accounts to be paid at one centre.

The matter was raised by Ald. H. Sutcliffe, of Horsforth, who said it was felt by members of the Leeds Local Committee that it would be an advantage if some arrangement could be made for accounts to be paid at one centre. One or two members had been used to this arrangement in the past in their own areas and deprecated the withdrawal of such facilities.

Dr. R. S. Edwards, Chairman of the North Eastern Gas Board, promised that consideration would be given to the matter by the Board and it would be reported back to the council. He mentioned that Leeds Corporation still accepted gas and electricity accounts at the same office, but described it as a left-over from pre-vesting date and required authority from the Minister to continue it from year to year. Banks in Leeds also took accounts, but notice had now been given that they were to cease this arrangement at a date to be determined. Replying to County Coun. Mrs. Jessie Smith, of Colne Valley, Dr. Edwards stated that discussions were taking place at national level and arrangements were being made for experiments in joint meter readings.

A complaint was considered by the council from Filey U.D.C., which was supported by Filey and District Chamber of Trade, Whitby U.D.C., and the East Yorkshire Urban Councils' Association, concerning the quarterly minimum charge imposed under the new gas tariff, Dr. Edwards contended that Filey 'had got hold of the wrong end of the stick,' adding that it was a feature of any block tariff system that unless some charge was levied in a quarter when no gas was taken, inequity would result. It was decided to send a reply to Filey U.D.C. on the lines of Dr. Edwards' statement.

West Midlands Face Rising Costs

RISING costs of gas production were described at a meeting of the West Midlands Gas Consultative Council on May 26 in Birmingham as alarming and the Chairman of the West Midlands Gas Board (Mr. G. le B. Diamond) admitted frankly that he did not know how further savings could be made. Recent increases in petrol and oil, Mr. Diamond told the Council, would mean an additional expense for the Board of nearly £100,000 a year. With all the effort which could be put into obtaining higher efficiency that was a large sum to save. All of them on the Board and on the staff—most of whom had spent their lives in the gas industry—deplored these additions to the cost of working and they would do anything they could to avoid having to pass on these additions to consumers.

'In the West Midlands,' he said, 'we are now in our carbonising results more highly efficient than any other Board in the country, producing more therms per ton of coal carbonised than any other board. That is not only due to good engineers and good staffs but we have been fortunate in the Midlands in inheriting in the main very efficient manufacturing plant at most of the undertakings. We have mostly vertical retort plant—which is highly efficient—and we have more of it, producing better results, than any other boards.'

Some people criticised cost of administration but he pointed out that the whole cost of that was 0.4d. per therm and if they did away with administration, they could not pay wages, send out accounts, or indeed conduct the business at all. He thought the Council would agree that administrative charges were very small. Other people spoke of expensive motor cars. In fact the Board possessed one, and that was a heritage from pre-vesting day. The whole of the cars used by officers of the Board were their own property for which they received a running allowance in accordance with the local authorities scale.

Mr. Diamond told the Council that for the six months ended March, 1952, the total gas made and purchased was 39,183,782,000 cu.ft. as against 39,007,720,000 cu.ft. for the six months to March, 1951, an increase of 0.5%. For the year ended March, 1952, the total was 70,765,716,000 cu.ft. as against a total of 69,062,559,000 cu.ft. in the 12 months to the end of March, 1951, an increase of 2.5%.

Increasing Industrial Demand

Restrictions on supplies of some raw materials, the mild conditions in early winter and the economy in personal expenditure had contributed to a reduction in the rate of increased consumption in comparison with the two previous years. Despite the reduction in some fields of industrial production additional demands for gas for industrial purposes remained unsatisfied. The total of refused loads now stood at over 10,000 mill. cu.ft. per annum.

Although stocks of coal for gas making did not reach in October, the original target set by the Ministry of Fuel and Power, supplies during the winter were adequate and in fact the stock of 223,600 tons at the end of March was higher than March, 1951, by some 52,000 tons. Consumption during the six months was 1,688,400 tons, an increase of 2% over last year, and the consumption for gas making during the year amounted to 3,190,500 tons, 2.5% more than in 1950-51.

The coke position had greatly improved and a strong plea was made to the public to buy now. At peak periods of demand haulage became a difficulty and users were advised to take advantage of the opportunity to stock up to the extent of permitted quantities. In the winter much coke was purchased in small quantities on the 'cash and carry' basis and it was recognised that stocking might be limited by lack of storage space and maybe of cash.

Reorganisation and Development

Existing restrictions on capital development and the shortage of steel had had a profound effect on the Board's general plan for the development of gas supplies. The Board's immediate policy had therefore been directed to the completion of the construction of production plant already well advanced, together with the improvement of existing manufacturing stations which would bring about increased efficiency, coupled with the addition of units of manufacturing plant where these could be accommodated at existing sites.

To carry out the plans originally approved by the Board, it would have been necessary to have 24,700 tons of steel for the year ended March 31, 1953. The annual allocation was 12,900 tons, which was only 52% of the Board's requirements. He had heard that morning that that allocation had been cut further.

A report on gas fitting contractors in Birmingham was received. At the meeting of the Council in March a member raised the question of the employment of contractors to carry out gasfitting work in the Birmingham district and it was agreed that information should be given to the Council. The facts were that more than 40 years ago the Birmingham Corporation entered into an

(Concluded on page 777)

arrangement with an Association, now known as the Birmingham and District Master Gas Fitters' Association, whereby members of the Association carried out selected gasfitting work to specification and at agreed scheduled prices.

Whatever the genesis of the arrangement was originally, the Gas Committee continued it up to vesting date and regarded it as an advantageous one. Many members of the Association and its employees were Birmingham Gas Department trained fitters and, collectively, they formed a useful pool of reserve labour, which enabled the Department to cope with the demands made on it. The Board had continued the pre-vesting practice.

At no time had work been placed with contractors which would react on the full employment of gasfitters in direct employment. These now numbered approximately 300, a number insufficient to meet all demands all the year round and there might be problems at certain periods of the year if direct labour was substantially increased.

The schedule of prices was reviewed from time to time and, for purposes of comparison, strict checks were made with costs of comparable work carried out by direct labour. The costs of direct labour were not confined to actual basic wages paid, but included a substantial element in respect of national insurance, holiday and sick pay, superannuation, clothing, tools, shop and walking time, supervision and other overheads.

The Board was satisfied that the present policy was economic and that its continuance was in the interests of the Board and the Birmingham consumers. There had recently been a period of lean years in the recruitment of sufficient gasfitter apprentices in most parts of the West Midlands, but there were now indications of improvement in this respect. Schemes for training and education were being developed, partly under the ægis of the local education authorities, and these schemes included trade apprentices employed by contractors.

The Council was told that many consumers of gas used the prepayment slot boxes of meters for the purpose of saving money. What happened, Mr. Diamond explained, was that a larger amount of money than was necessary was put into the coin boxes and consumers knew that the collector was honest and the industry was honest and would not take more than the amount due. So when the collector came round there was an amount 'saved.'

Food Fair

SPONSORED by Bentalls, Kingston, a 'Food Fair' was opened by Bernard Braden and Barbara Kelly, of radio and television fame, on May 9 last, and was attended by thousands of shoppers during its two weeks' duration. The South Eastern Gas Board contributed by way of a demonstration by Mrs. K. H. Murphy, of the home service staff, entitled 'A New Angle on Puff Pastry.'

A wide range of gas appliances were exhibited in the demonstration theatre and these were supported by display panels showing current double crown posters.

Gas industry films were shown daily, including 'The Obedient Flame,' 'Uncle Explains,' and 'What's Cooking.'

Meter Rent Test Case

TWELVE local business men appeared at Bristol County Court last week to explain why they should not pay increased meter charges imposed by the South Western Gas Board.

To represent them the Gas Meter Protest Committee, an offshoot of the Independent Traders' Alliance, had briefed counsel, Mr. W. M. Huntley.

It was agreed to take the hearing against one of the business men, Mr. Arthur Victor Blackburn, a local ironmonger, as a test case. He is a former Bristol City Councillor, a member of the National Executive of the Independent Traders' Alliance and the local Vice-President.

When the case was called, Mr. H. R. Askew, for the Board, told Judge H. W. Paton: 'It is quite clear that these cases involve an acute question of law and more time is required than is available to-day.' If an adjournment was granted, he said, the Board would be willing to pay the costs of the traders.

Judge Paton agreed to adjourn the hearing to a date to be fixed.

The South Western Gas Board raised the meter rent charge from 1s. 3d. to 3s. from the first meter reading in June, 1951.

METER MANUFACTURE AT NEWCASTLE

Above: General view of the new factory. Right: Mr. J. B. Clay looks on while Mr. E. Crowther studies minute details of meter manufacture.

ON Tuesday, May 20, Mr. E. Crowther, Chairman of the Northern Gas Board, Mr. J. R. Bradshaw, Deputy Chairman, and the Divisional General Managers of the area inspected the new branch factory of Alder & Mackay, Ltd. (Edinburgh), at Haddricks Mill Road, Gosforth, Newcastle - on - Tyne, on the occasion of its opening. This factory deals with the whole of the work from the Northern Gas Board area.

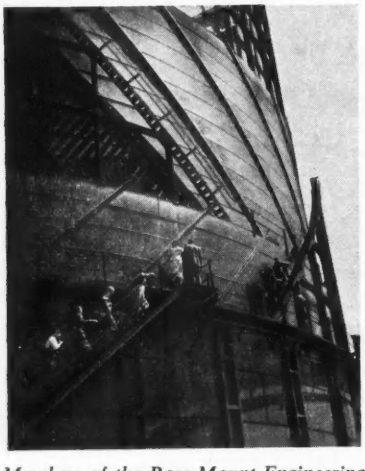
Mr. Stanley Bennet, Managing Director, Mr. Joe Bennet, and Mr. J. B. Clay, Directors, accompanied the Board members on this inspection. Lunch was subsequently served at the Royal Station Hotel.

Rose Mount Engineering Society

THE Rose Mount Engineering Society, formed of employees of Robert Dempster & Son, Ltd., Elland, arranges a regular course of monthly winter lectures, which are supplemented during the summer months by works visits. Nearly 50 members of the Society recently paid a visit to inspect work under construction by the firm at sites for the East Midlands Gas Board.

Leaving Elland by special coach in the morning they visited the Killamarsh gasholder station, near Sheffield, where a three-lift spirally guided holder of 500,000 cu.ft. capacity in steel tank is being erected. Members saw the first principal of the crown framing being placed in position, and also inspected other details of the gasholder in course of construction.

After lunch the party proceeded to the Whittington gasholder station, near Chesterfield, where a four-lift spirally guided holder of 2 mill. cu.ft. capacity in steel tank, recently completed by the firm, was inspected, together with remote control equipment, and gas-fired boiler for the anti-freezing apparatus.



Members of the Rose Mount Engineering Society inspecting the 2 mill. cu.ft. holder at Whittington.

The remainder of the afternoon was spent at the Chesterfield gasworks where the party was conducted round the plant. Six beds of 10 horizontal retorts installed by the firm were seen in operation, and the resetting of a further six beds was in progress. After visiting the water gas plant, ancillary plant, and purifiers, the party was also able to inspect the steel tank for a 2 mill. cu.ft. spirally guided holder in course of erection at the Chesterfield works, where De Bergue riveting was in operation on the side plates.

After the inspection of the works, the Gas Board entertained the members at tea, and Mr. E. Whittaker, a Vice-President of the Society, referred to the long association between his firm and the Chesterfield works, and thanked the Board's officials for the facilities which had been granted, to which Mr. C. S. Davies, Manager of the Chesterfield undertaking, responded.

GERMAN GAS AND WATER ENGINEERS

(From a Correspondent)

THE great city of Essen, battered almost beyond recognition during the war by repeated waves of Allied heavy bombers, was chosen this year as the venue of the twin German Gas Engineers' organisations, the D.V.G.W. and the V.G.W., for their annual general meeting. Brilliant sun, alternating with showers, showed to the thousand delegates and thair ladies a handsome new city arising, phœnix like, from the ashes and rubble of the old.

It was unfortunate that the German meetings coincided with those of the Institution of Gas Engineers in London. However, two British gas engineers and one lady (Mr. and Mrs. J. J. Priestley and Mr. R. J. S. Thompson—both Mr. Priestley and Mr. Thompson are with W. C. Holmes & Co., Ltd.) made the journey to Essen, and there received every hospitality. The meetings followed the customary pattern. The opening proceedings on Wednesday, May 28, in the new Städtischen Saalbau began with an organ recital and songs by the Male Voice Choir of the Ruhrgas A.G. Then followed official greetings and replies, and a paper by Professor Erich von Holst, of Wilhelmshaven.

Thursday morning was devoted to papers of interest to gas engineers, and Friday morning to those concerning water engineers. In contrast with British practice, the papers were read in full and were not discussed afterwards. Probably the most notable paper read was that given by Dr. Traenckner, of Ruhrgas A.G., on gas production from non-coking coals. Traenckner's proposals were revolutionary and your correspondent predicts a lively interest with plenty of controversy not only in Germany, but in this country as well, as a result of his paper.

The afternoons were taken up by visits to coking plants, gasworks, water works, glassworks, and engineering establishments in the Ruhr district, many engineers taking the opportunity to visit the unique carbon and biological research station (Koblenstoffbiologische Forschungsstation) at Essen directed by Dr. F. Gummert, of Ruhrgas A.G. Saturday morning was devoted to visits to modern collieries, where both underground and surface methods were studied.

The social side was by no means neglected. About a thousand people enjoyed themselves (some until daylight) at an informal dance on Wednesday evening, and on Friday night there was a gala performance of the light opera, 'Zar und Zimmermann,' at the Opera House. The ladies (numbering about a hundred) visited the two local beauty spots, the Gruga Park and the Baldeneysse, while the menfolk were about their more mundane business.

The late H. J. Hodsman never ceased to point out that industrial regions need not be ugly, quoting Germany for examples. That he was right was evident during all the visits your correspondent made in the Ruhr, which is the most heavily industrialised area in Europe—and this in spite of the appalling devastation left by a modern war.

Penfold Golf Tournament.—For the first time in Wales the Penfold Golf Tournament made Llandudno its venue. The meeting was held on the North Wales and Maesdu Courses, and on the latter course special catering facilities were laid on by the Llandudno undertaking of the Wales Gas Board. Paynes, Ltd., of Llandudno, the official caterers, highly praised the efficient arrangements for the gas equipment and it was stated that these contributed in no small measure to the success of the meeting.

IN PARLIAMENT — Concluded from p. 771

was one thing he would like to emphasise at the outset—he could not share the impression conveyed by his hon. Friend the Member for Bath that, by and large, very little good was resulting from the activities of consultative councils. He did not think that was so. There was a considerable amount of good emanating from them, as an example of which he instanced the case of a consultative council bringing pressure to bear on its board to fight harder for the installation of gas in council houses, which was successful.

He agreed that it might well be that greater confidence would be given to the public if reconsideration could be given to the relationship between the chairmen and secretaries of councils with their boards. For instance, it might be that the board representative on the council should be vice-chairman or hold some post other than chairman, so that there would be an independent chairman.

At this point Mr. E. SHINWELL (Easington) intervened to observe that he had set up the consumers' councils in the first place, and it certainly was not his intention that any member of the board should occupy an official position.

The Parliamentary Secretary said the fact remained that at the moment the chairman of the consultative council was always a member of the board, and this arrangement might well be revised. It might be feasible to have as secretary a retired official of the board, who knew the work, instead of an active official. The debate had been of considerable assistance in giving them an opportunity of expressing their views, which he had not the slightest doubt would be read with the greatest interest by the members of the consultative councils, and in giving Parliament an opportunity of considering whether or not it might be desirable to make some variation in either the administrative set-up or the actual constitution of the councils themselves.

In concluding the debate, Colonel RALPH CLARKE (East Grinstead) said it was only logical that if members of boards sat on these councils they should not be voting members.

Meeting Rising Costs

By

T. C. BATTERSBY, M.I.Mech.E., F.C.S.,

General Manager, Watford Division, Eastern Gas Board.

Chairman's Address to the Eastern Section of the Institution of Gas Engineers

MANY of us supposed that the steady upward trend of the gas consumption of the domestic consumer, which was apparent during the war years, was unlikely to be maintained in the post-war years, and that consumptions might fall slightly, but expected that in all new houses there would be a demand for a substantially higher standard of heat service than builders had hitherto thought it necessary to provide. It was, therefore, not unreasonable for the gas industry to anticipate getting a considerable share of this business for its two fuels—gas and coke—if tenants were given freedom of choice, and that the potentialities of the industrial field, which were never in doubt, would be quickly realised.

When the industry passed into public ownership, many undertakings were planning major extensions. The surveys which were made in the light of the conditions prevailing after vesting date showed that many of the projected developments did not fit into the new pattern, and were abandoned in favour of planning on a much bolder scale. New schemes were prepared for centralising manufacture at a number of carefully selected sites, many small and uneconomic works were scheduled to be closed down, and isolated manufacturing stations brought within an integrated system, so that the economic advantages of base load operation might be practised.

This overdue physical reconstruction of the industry was conceived as a long-term policy, to be programmed in accordance with the urgency of each project as seen in relation to our statutory obligation to satisfy the expanding demand for gas and the extent of the economic advantages to be achieved in each phase.

Overstrained Economy

It was appreciated that progress would be slow, owing to the retarding influence of planning legislation and the unprecedented peace-time demands for labour and materials, but now, unfortunately, the national economy has become overstrained and cannot support all the many capital investment schemes which are either necessary or desirable, and our industry, like others, has had to suffer its share of retrenchment. Latterly, the demands imposed on the nation's iron and steel resources for defence purposes have brought many projects to a halt, and we cannot foresee when circumstances will permit us to resume these schemes, if, in fact, the case can be sustained for proceeding on the lines originally envisaged or adopted in deference to local wishes, which had little regard for reality and the financial aspects.

In not a few instances, æsthetic considerations have been permitted to outweigh the economic advantages, and it may well be that former decisions will have to be reviewed and tempered to the financial and material resources of the nation.

There is no evidence to suggest that in the years ahead we shall have an abundance of good coal suitable for carbonising in the types of plants which carry the base load today; indeed, there is a very disquieting trend apparent. Therefore, to meet additional gas demands, we may be compelled to use increasing quantities of oil in one process or another, for base load as well as peak load purposes. This prospect alone is sufficient to revive our interest in research, which we have recently learned is to be pursued with greater intensity.

In consultation with the Ministry of Fuel and Power, the Gas Council has the duty, under Section 3 of the Gas Act, 1948, of settling a general programme of research into matters affecting gas supply and carbonisation. No doubt this programme will cover a very wide field, such as a study of the application of the gas turbine to electricity generation from waste heat in retort installations, raising the efficiency of carbonisation, the utilisation of lower grade coals, complete gasification in Lurgi type generators, the cracking of oils and the utilisation of low-grade oils and residues, methane synthesis, and the design of plants for the production of peak load gas. We may speculate on the great possibilities which lie ahead, and everyone will hope that prototype plants will shortly lead the way to commercial processes which will revolutionise gas production.

However, these are not new ideas, but problems with which the industry has wrestled for years, and it may well be that many more years will elapse before they are resolved. If, for some time, the processes of gas production are to remain substantially as they are practised today, the tempo of centralising manufacture may have to be regulated solely by the rate that old units, on comparatively small works, fall due for rebuilding. New plant is now two-and-a-half to three times the pre-war cost, and while every problem must be carefully investigated, it would appear that generally the higher efficiencies and the labour and staff economies to be achieved on a large works, as compared with those obtainable on a well-designed and efficiently managed undertaking producing as little as 1 mill. cu.ft. per day, are insufficient to offset the burden of the heavy capital charges and the additional costs of transmitting gas and delivering coke over the intervening distances.

It is in the light of these factors and the country's economic plight that we should re-examine the case for centralisation, and, as an interim measure, consider what improvements can be effected on our existing works with a minimum of capital outlay. We must also explore the possibility of grouping adjacent works, operating them as base load stations, and connecting them with pressurised mains to central stations, which alone would vary their rates of production to satisfy the daily and seasonal demand variations.

The Government's anti-inflationary measures and the recession in world trade may have the effect of limiting the gas demand for domestic and industrial purposes, or retarding the rate of increase in the latter field, and these factors must be brought into our reckonings.

Trend of Gas Demands

I referred earlier to the potential demand for fuels in domestic premises, and of our expectations where tenants are offered freedom of choice. In the Watford undertaking, we originally planned to meet an average gas consumption of 150 therms per consumer per annum, and anticipated that gas would be used for the essential domestic requirements in 75% of the new houses. In the new towns it was computed that the industrial and commercial usage would be equal to the domestic consumption. This latter assumption was based on the ratio of usage in Welwyn Garden City and Letchworth. While we have no reason to believe that the industrial target will not be achieved, we are less sanguine that the domestic

estimate will be reached. For a variety of reasons, the gas consumption in the new houses is tending to run below our estimates, but throughout the country the domestic demand is declining to a similar pattern.

Table 1 summarises a survey made in the gas and electric areas of an L.C.C. estate, and Fig. 1 shows the trend of domestic consumptions in the Watford group from 1934-51, and the national domestic average from 1943-49.

TABLE 1

	No. of Consumers	Appliances in use	Annual Consumption per Consumer therms
(1) Gas area with gas cookers (no fires)	570	Gas cooker Gas wash-boiler Gas ignition	142
(2) Gas area with gas cookers and gas fires	151	Gas cooker Gas wash-boiler Gas ignition Gas fire in bedroom	158
(3) Electric area with gas cookers	244	Gas cooker Gas ignition Electric wash-boiler	130
(4) Electric area with electric cookers	96	Electric cooker Electric wash-boiler Gas ignition	24
	1,061	WEIGHTED AVERAGE	131

During the war years conditions were very abnormal. In many cases houses were occupied by more than one family, and solid fuel was in short supply. These conditions are changing. The average density per dwelling is lower, the solid fuel supply has improved, and in many cases improved burning appliances have been installed.

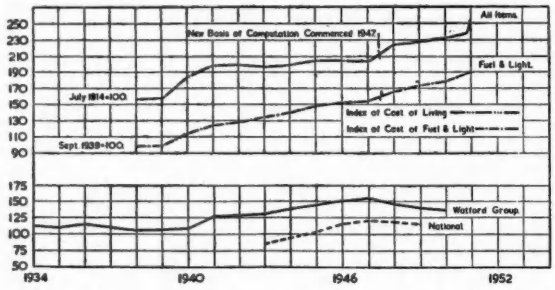


Fig. 1.—Gas consumption per domestic consumer—Watford group and national. The upper scale shows fuel and cost of living index; the lower scale gives therms per domestic consumer.

In the last three years there has been little variation in the availability of other fuels. If we discount temperature variations—and these are negligible if taken on a yearly basis—it is reasonable to deduce that the lower gas consumption is now mainly attributable to the reduced purchasing capacity of the public, and the high price we are compelled to charge for gas. This downward trend seems typical of what we may expect to happen if we rely solely upon increased charges to offset the increased operating costs. The following information, abstracted from the White Paper on 'National Income and Expenditure of the United Kingdom, 1946-1949,' shows the average annual expenditure on heat services, relative to other household disbursements:—

	1938	1946	1947	1948	1949
Fuel and light as percentage of expenditure ...	4.55	4.29	4.10	4.18	4.15
Coal percentage of fuel cost ...	55	41	41	41	40

The proportion of expenditure on fuel and light shows a downward trend compared with 1938. This, no doubt, reflects the influence of costs, but the fall in the percentage of coal expenditure to total fuel expenditure is most likely to be due to rationing rather than a voluntary change of habits.

Although generally throughout the country, and for most purposes, gas prices are competitive with electricity, any further upward adjustment of rates might find us priced not only out of our competitive position, but out of the family budget. As gas men, we are pretty confident that the findings of the Ridley Committee will show that the country's indigenous heat resources are most economically used when coal is carbonised for the production of gas and coke, and, despite the fact that the nation is being adjured to become more fuel conscious, unless the utilisation of alternative fuels is controlled by legislation the public will have little regard for fuel conservation and will even discount convenience of operation and the saving of labour when the domestic purse is strained by the competing attractions of the age. In the future, as in the past, while this freedom prevails we may expect price to be the main criterion, governing both the choice and the extent of usage.

Competition With Electricity

I think, in the first place, we should consider the relative apportionment of the sales of gas and electricity, and the following details are abstracted from the National Statistics of the Ministry of Fuel and Power, 1950, and relate to the calendar year 1949, which is the latest information published:—

	Gas	Electricity
Domestic	60.3%	32.1%
Industry	23.1%	49.0%
Non-domestic ...	16.6%	18.9%

It will thus be seen how important the domestic load is to the industry, and by our facilities for storage it offers a much better load factor than is enjoyed by our competitor in this field.

If we refer to the published accounts of the gas and electrical industries for the year ending March 31, 1951, the average price of gas to domestic consumers was 14.75d. per therm, while the average price of electricity was 1.46d. per unit. If we take 20 units as equivalent to one therm of gas when used for cooking, the cost of electricity is 29.2d. per therm compared with 14.75d. per therm of gas, or very nearly twice the cost.

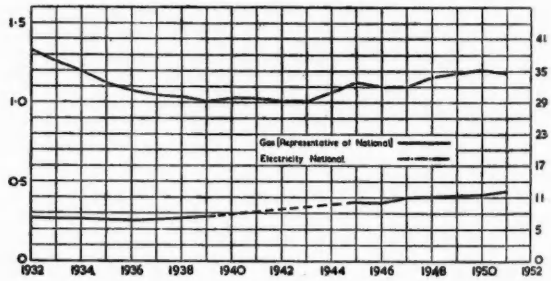


Fig. 2.—Revenue per unit gas and electricity; gas in pence per therm; electricity in pence per unit.

If today, 18 months later, we consider the position from the point of view of the domestic consumer in the Eastern area, who has the usual electrical equipment such as lighting, radio, electric cleaner, etc., and who is on a two-part tariff either by choice or compulsion—there being, in places, no other tariff available—the comparison then becomes, if I may make some generalisation for the area, 20d. per therm for gas cooking, which is equivalent to 1d. per unit for electric cooking.

It is interesting to consider how this state of affairs has been reached, and to speculate on the possibilities in the future. It is very difficult to compare gas and electricity charges in the Eastern areas. Prior to nationalisation, there were many separate undertakings. We are, therefore, forced to look to national figures for trend of prices, and in the absence of better information the revenue per commodity unit has been taken. The electricity figures have been obtained from the published national statistics, but the gas figures have been obtained from the published accounts of a representative selection of private and municipal undertakings. (See Fig. 2.)

The price of gas fell slowly to a minimum in 1936, and if we may assume the trend between 1939 and 1945, it has risen steadily. The price of electricity fell steeply in the earlier period, due, as in the case of gas, partly to the influence of raw material costs, but mainly to increased overall efficiency. The Central Electricity Board came into existence in 1933, and by the construction of the grid, reduction of standby plant, base load working, and improved load factor during the war years, they were able to counteract rising costs until 1943. Since then, the prices of both commodities have been rising.

The increase in the thermal efficiency of generation has been brought about mainly by the construction of power stations with efficient high-voltage turbo-alternators working on high pressure steam at high temperatures, and with re-heat cycles.

The thermal efficiency of the best base load power station is now just over 30%. The average for the country, as is shown below, is rising slowly, but has not yet reached 22%, and it may be accepted that there can be no great improvement with the present method of generation and the existing load factor.

	Thermal Efficiency
1920	under 10.00%
1939	20.80%
1948	21.15%
1949	21.33%
1950	21.54%
1951	21.79%

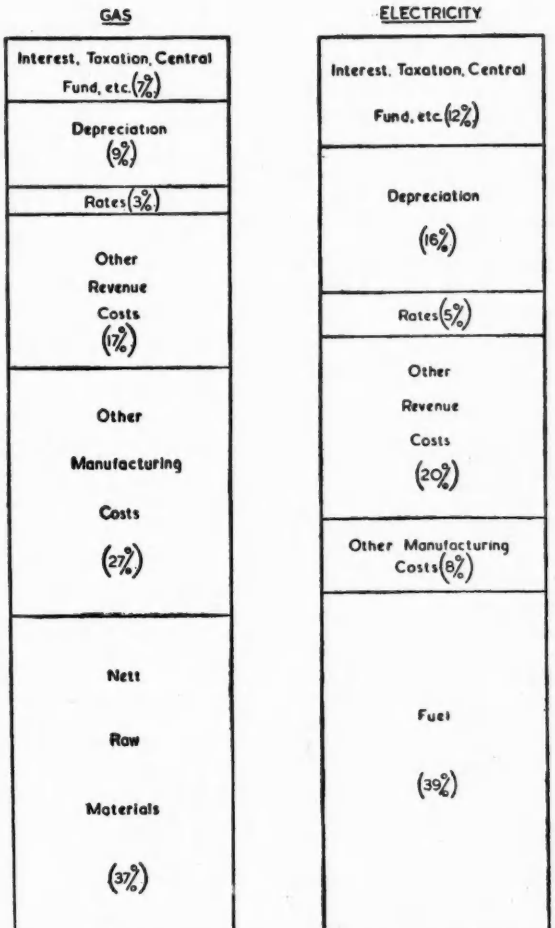


Fig. 3.—Constituent costs of gas and electricity (national) based on figures for the year ended March 31, 1951. Revenue from sales = 100%.

Although throughout these years the gas industry has raised its production efficiency, the results are less spectacular. The reduction of fuel consumption in producers and the more effective utilisation of waste heat have been the principal factors affecting costs.

I feel that the two industries are now in a comparable stage of development, and only a major change in the technique of either could appreciably alter this. However, the price of the effective therm is now so close that small variations are critical. In this regard, it must not be overlooked that both industries are vulnerable to external factors such as load discrimination and preferential raw material prices.

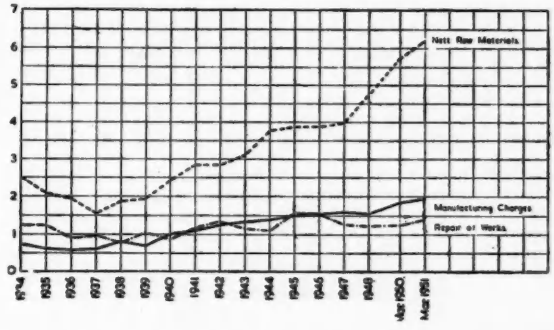


Fig. 4.—Trend of costs—Watford group (recent figures divisional). Cost in pence per therm.

Exclusive of service and carcass charges, gas and electricity distribution costs are today running very close. It has been quoted that it costs the South-Eastern Electricity Board to main new housing estates £30 per house, producing a gross revenue of £10-£15. Gas mains to the new housing estates within the Watford Division are costing approximately £28 10s. per house, and yielding a gross revenue of the same order per consumer.

Comparison of Total Costs

I had hoped to show the trend of national gas and electricity production costs over a number of years. As this proved impossible owing to the diverse accounting methods employed, I think it might be of interest to consider the composition of the costs of the two industries for the past year, and this is shown diagrammatically on Fig. 3. It is noteworthy that the cost of raw material is equally important to both industries.

I also endeavoured to compare the respective costs in the Eastern area, but this has proved impracticable, because the Eastern Electricity Board retails about twice as much current as the Eastern division generates, and the position is further masked by the inclusion of Central Authority charges.

We in the Watford division have watched the trend of our own costs over the years, and those of more immediate interest are shown in Fig. 4. The increase in net raw material, because of its magnitude and the steepness of the rise, merits investigation.

The immediate thought is whether an undue proportion of the cost of raw materials is being borne in the cost of gas. The price of coal and coke shown in Fig. 5 would hardly suggest this to be the case, but the marketing policy of the Coal Board in respect of domestic coal may have been responsible for the divergence of prices since the war.

The block diagrams in Fig. 6 indicate the constituents of the cost of gas for the years 1933, 1938, and 1950-51, and the revenue from by-products is also shown. In preparing these diagrams it was borne in mind that in 1938 the capital charges were not recorded separately, and it was therefore necessary, in order to make a comparison, to include depreciation with the working costs in the 1950-51 figures.

In 1933 it will be seen that the net raw materials was about 50% of the gross raw materials; in 1938 it was approximately 40%, and in 1950 it had again reached 50%.

This was further investigated and the net to gross relationship, expressed as a percentage, was plotted for the period 1932 to 1950 and is shown in Fig. 7 based on the results of the former Watford undertaking (the post-vesting figures being divisional). In view of the possible effect of the varying proportion of water gas each year, a check was made using theoretical carbonising results and prevailing prices. This did not show any great divergence from the actual results.

With the Watford line on Fig. 7, I have also shown the national figures and these follow the same trend.

The ratio of net to gross raw material costs is, of course, influenced by market conditions, but it is interesting to note that in recent years the gross cost of coal has been borne equally by gas and residuals.

Rising Costs

There is no simple solution to the burden of the rising costs of the industry's commodities. Our problems are not less complex because we are a two-fuel industry, and unfortunately the impact of government decisions and factors outside our immediate control compel us to pursue policies so flexible as to be inconsistent with good business practices normally accepted as synonymous with maximum efficiency and economy. Nevertheless, it is incumbent upon us to examine every function and process critically, and endeavour to find a yardstick by which they can be accurately assessed and controlled to the best advantage.

In the time at my disposal, I cannot deal with all the factors which have a bearing on production and distribution costs, with the economies which accrue from increased consumption per consumer and per mile of main, or with the importance of consumer research as the complement of an efficient selling organisation. It is already evident that sales promotion is to be subordinated to national expediency, and we may find this to be the first step towards some measure of co-ordination of the fuel industries. In any case, sales policy would hardly be an appropriate subject for this meeting. There are many other features which I shall exclude from consideration, such as the influence of employees' welfare activities, the need for good labour relations and communications throughout all levels of control, the standardisation of consumable goods, and codes of practice. Because these factors are specifically omitted, it is not that I underrate their importance.

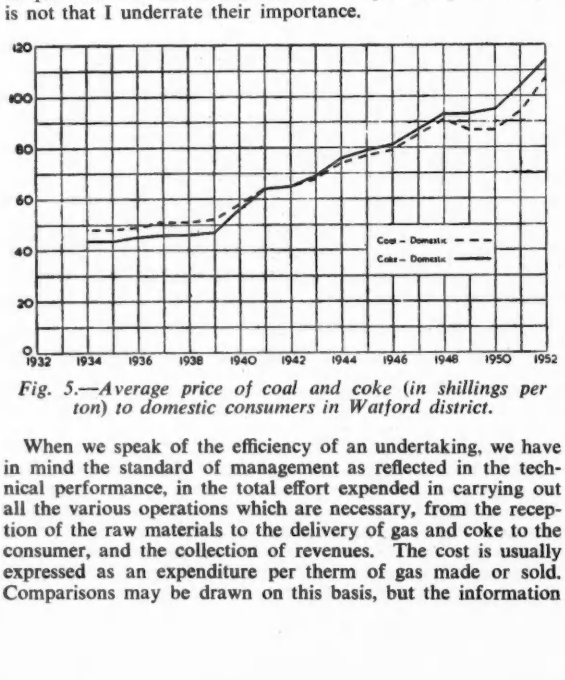


Fig. 5.—Average price of coal and coke (in shillings per ton) to domestic consumers in Watford district.

When we speak of the efficiency of an undertaking, we have in mind the standard of management as reflected in the technical performance, in the total effort expended in carrying out all the various operations which are necessary, from the reception of the raw materials to the delivery of gas and coke to the consumer, and the collection of revenues. The cost is usually expressed as an expenditure per therm of gas made or sold. Comparisons may be drawn on this basis, but the information

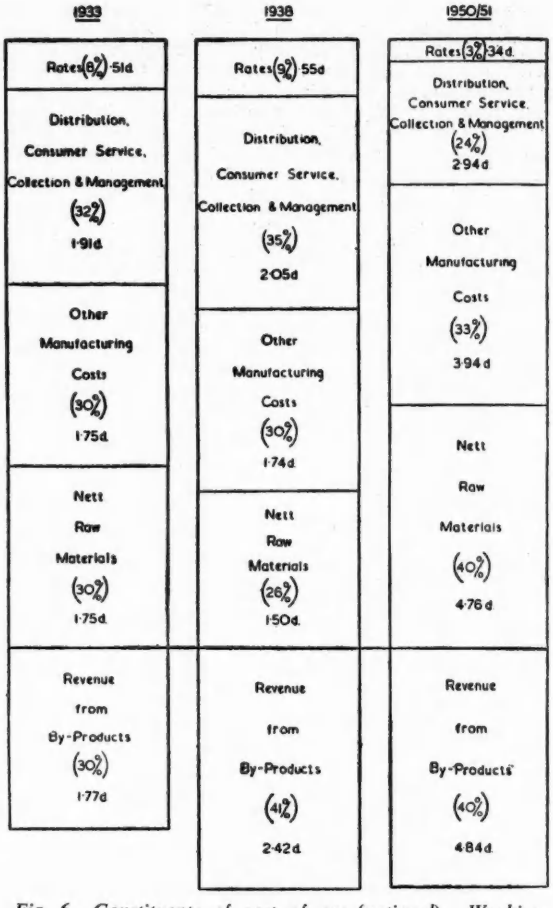

1933
Rates (8%) 5·1d.
Distribution, Consumer Service, Collection & Management (32%) 1·91d.
Other Manufacturing Costs (30%) 1·75d.
Nett Raw Materials (30%) 1·75d.
Revenue from By-Products (30%) 1·77d.
1938
Rates (9%) 5·5d.
Distribution, Consumer Service, Collection & Management (35%) 2·05d.
Other Manufacturing Costs (30%) 1·74d.
Nett Raw Materials (26%) 1·50d.
Revenue from By-Products (41%) 2·42d.
1950/51
Rates (3%) 3·4d.
Distribution, Consumer Service, Collection & Management (24%) 2·94d.
Other Manufacturing Costs (33%) 3·94d.
Nett Raw Materials (40%) 4·76d.
Revenue from By-Products (40%) 4·84d.

Fig. 6.—Constituents of cost of gas (national). Working costs = 100%.

is insufficient to enable one to decide whether or not the cost is reasonable.

The fuel or technical efficiency of the industry depends upon three factors—the conversion of raw materials into gas, coke, and other products, distribution, and utilisation. A broad assessment of the technical results which should be achieved on any works is relatively simple, as the thermal basis of computation has been accepted by the industry and used as a yardstick for many years. The losses to be expected in distribution and utilisation are well established and readily comparable. If, in the latter case, the costs are borne directly by the consumer, they have their impact on the industry, and are, therefore, no less important for us.

Production and Distribution

This cost today in the Watford division accounts for about 72% of the total cost of gas sold, and it is not unreasonable to assume that this position holds throughout the industry, and is, therefore, the sphere in which the greatest economies might be expected. The technical efficiency of production is very appreciably influenced by the load factor, and quite remarkable results are obtained when a works is operated as a base load station, supplying daily a steady volume of gas at an optimum manufacturing rate into an integrated distribution system. Many other factors, such as site problems, plant layout, and the rigidity of labour agreements, make a direct and superficial comparison between one undertaking and another both difficult and misleading, without a detailed knowledge of the conditions obtaining.

(*Continued on p. 791*)

Distribution in all its aspects merits more attention than it customarily receives. Throughout the war years, and ever since, limited material and labour resources have compelled us to concentrate on production rather than distribution. Few undertakings have been able to maintain their pre-war meter changing programmes, or to renew old service pipes as they should. Instances are not infrequent where unanticipated

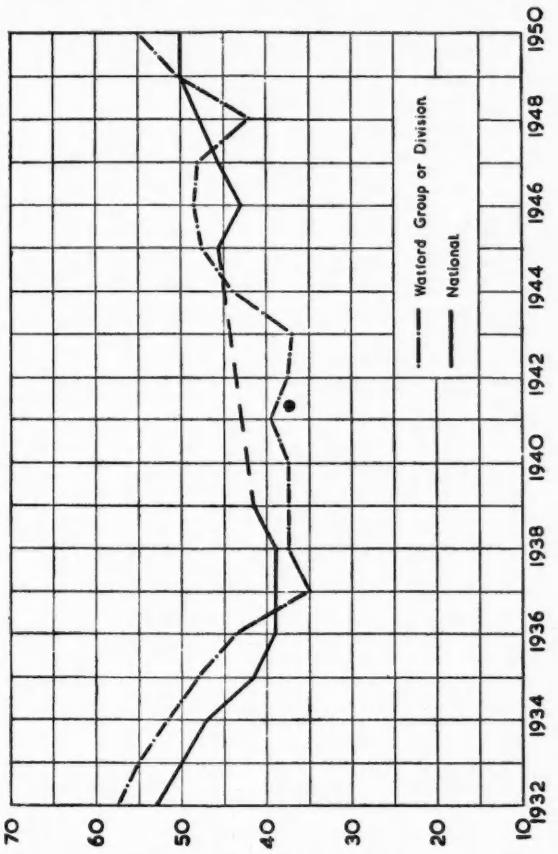


Fig. 7.—Net raw materials cost expressed as a percentage of gross raw materials.

development has been met, or outlying areas added and supplied by resorting to high pumping pressures far in excess of the conditions for which the mains were originally laid, and incurring annual power costs higher than would be required to meet the capital charges and operating costs of a correctly balanced system.

The factors influencing gas unaccounted-for are reviewed in detail in the report of the Institution, and we are all familiar with them, but I think it is of interest to consider a graph of the unaccounted-for gas in the Berkhamsted undertaking, as it shows what has been achieved by a bold and imaginative policy during the years between 1919-1949. (Fig. 8.)

As results such as these must be the envy and aim of everyone, I think it is worth while recounting the steps the engineer took to achieve them. The holders are regularly examined and carefully checked for leakage, and works operations are regulated to avoid the blowing of seals. The oxygen content of the gas is closely controlled and is never allowed to exceed 0.4%. This reduces the corrosion in the distribution system, and thereby contributes to the more accurate performance of meters.

The ground in the district consists of an upper layer of clay, with a chalk subsoil. Only heavyweight bitumen-wrapped and internally oiled service tube is used. If a service is recurrently blocked, it is relaid, as the cause of the trouble is assumed to be due to the deterioration of the material.

In about 1932, extensive relaying of old and undersized mains was commenced, and 4 in. diameter was adopted as the minimum size for cast iron mains. All mains laid were coated internally with red lead by the makers, and, after laying, tested to an air pressure of 10 lb. per sq. in. before being brought into use. The use of split collars for repairs is rigorously avoided, and where they were known to exist, they have been removed and the section relaid in a more permanent manner.

The consumption of consumers' meters is carefully watched, and checked from quarter to quarter. If there is any variation to suggest that the meter might be passing unregistered gas, a test is carried out *in situ*. It has been found by experience that a meter known to be registering inaccurately, can show a correct result on the test bench, as the disturbance dislodges grit from under the valve seats.

District pressures are carefully controlled and governed to avoid excessive pressures throughout the system, particularly during the night. Governors are fitted on all street lamps to ensure that they operate at the correct rating, and only the most reliable controllers are employed. The lamps are checked weekly for leakage and controller setting, and on each visit the by-passes are adjusted to the lowest practical limit.

Although the reduction in unaccounted-for gas appears somewhat erratic, the general trend is very clear. The short term variations may be due to the fact that the meters were read at the end of the calendar year, which coincides with a period of high heating consumption, as the space heating load in this district is unusually heavy. Prior to 1950, this undertaking did not make any adjustment for accrued gas at the end of each year. Since vesting day there have been some variations in the unaccounted-for figure due to the adjustment for accrued gas, but it is now reasonably constant at about 2.25%.

Utilisation

Under conditions of daily usage, appliances fitted with fixed orifices and governors, and space heaters incorporating neat gas burners, are less prone to fall out of adjustment, and consequently escape the interference of well-intentioned consumers. Unfortunately, however, the efficiency of the cooker hotplate, where probably 50% of the domestic demand is consumed, is often considerably below test-bench performance, due to the use of unsuitable utensils. The relative efficiencies of hotplate operation, using various types of vessels, is illustrated in the following table, extracted from a paper by E. W. B. Dunning, 'Domestic Gas Cookers—Design of the Hotplate.'

Type of vessel	Diameter of base (in.)	Height (in.)	Water Depth (in.)	Drilled Ring 12,000 B.Th.U./hr. With Lid	
				Gross efficiency	Gross efficiency as % of standard test
Standard vessel	7½	5	3	45.7	100
Cast iron saucepan	4⅞	3⅝	3	38.9	85.0
Milk saucepan (enamelled) ..	3½	2⅝	2⅛	26.8	58.6
Enamelled utility saucepan ..	5½	3½	3	41.5	90.6
Enamelled utility saucepan ..	7⅝	5	3	49.3	107.8
Milk saucepan (aluminium) ..	3¼	3½	2	28.2	60.2
Aluminium pan	8½	6	3	53.4	116.9
Aluminium pan (finned base) ..	8⅜	5½	3	59.5	130.2

The motor car is sold complete with accessories, and I think cooker manufacturers should be encouraged to supply purposely designed utensils with each cooker, or at least specify the minimum diameter of utensil for each burner. For our part, our sales personnel should discourage the use of the assorted shapes of ironmongery so frequently called into service.

In the commercial and industrial fields, badly planned heat treatment cycles, and the erratic loading of furnaces and ovens, can bring operating efficiencies as low as 5%. Our industrial gas engineers can do much to counter the criticism that gas is expensive, and, by demonstration, prove that where this fuel is used efficiently the price per therm loses much of its significance.

Costing as a Tool for Efficiency

It could be argued that the gas industry has been slow in applying modern methods to measure the efficiency of the detailed processes. This was recognised within the industry

itself as long ago as 1943, when the British Gas Federation issued its Report on the Planning of the Gas Industry, in which it says: 'If the gas industry is to accomplish the highest efficiency there must be a yardstick relating results achieved with effort expended. That yardstick is a well-designed costing system. . . . Authoritative direction is required to ensure that an agreed costing system is generally adopted and, further, that the results are made available.' The absence of proper costs was also recognised outside the industry, as is evidenced by the following statement appearing in the Heyworth Report of 1945: 'We have endeavoured to ascertain to what extent these variations of efficiencies are due to avoidable causes, or are inherent in the circumstances and situation of each particular undertaking. Unfortunately, the records and statistics kept by the industry preclude any direct comparisons of operating efficiencies.'

Prior to nationalisation there were many undertakings whose engineers were given only scant details of their operating costs, although more detailed information is available to them today. In my opinion, engineers require something beyond the cost per therm of certain main heads of expenditure, and the thermal yields of gas and quantities of by-products produced. The costs that are given are usually expressed on a pence per therm basis, but this does not always portray the clearest picture of the position. For some operations it is more realistic to use a natural unit, and I think this is illustrated in the following examples taken from the Watford divisional returns:—

	Works				
	A	B	C	D	E
Coal Handling					
Per ton	2s. 10d.	9d.	9d.	1s. 3d.	2s. 5d.
Per therm (coal gas)..	0.475d.	0.123d.	0.126d.	0.209d.	0.402d.
Per therm (mixed gas)	0.473d.	0.074d.	0.126d.	0.192d.	0.327d.
C.W.G. Coke Handling					
Per ton	3s. 11d.	7d.	—	3s. 3d.	4s. 11d.
Per therm (C.W. gas)	0.165d.	0.024d.	—	0.151d.	0.315d.
Per therm (mixed gas)	0.001d.	0.009d.	—	0.012d.	0.059d.
Changing Oxide					
Per ton	4s. 5d.	8s. 1d.	6s. 2d.	7s. 0d.	2s. 5d.
Per therm (mixed gas)	0.034d.	0.055d.	0.047d.	0.069d.	0.057d.

If the engineer is to achieve greater efficiencies, he must have the close support of the accountant, who, for his part, should make available to the engineer all those costs and statistics which enable him properly to assess the relative merits of the processes under his control, and to enable him to reduce costs wherever possible.

It may be of interest to refer briefly to the system operated within the Watford division of the Eastern Gas Board. We have basically a comprehensive cost code covering all expenditure and income, and giving separate costs for 10 manufacturing centres and 15 districts. The costing is completely integrated with the accounting system.

Dealing with manufacture and distribution only, for the purpose of this address, expenditure is divided into 19 main categories, which are broken down into some eight sub-sections, which, themselves, are divided into over 100 detail codes. By breaking down main costs into their constituent parts, any costs which may vary from standard, or average, can be investigated in detail by the engineer.

The coding of purchases, wages and stores, is done at the manufacturing stations, but the whole of the work relating to the collation of such costs is carried out mechanically at the divisional headquarters.

The procedure adopted is as follows:—

1. Manufacturing costs separated into coal gas and C.W.G. are prepared each month, with supporting data relating to thermal yields, by-products produced, etc., and these statements are sent to all engineers four weeks after the period covered. Each engineer receives not only his own costs, but the costs of all other manufacturing stations in the division.

2. Manufacturing costs and supporting data in rather more detail are prepared every three months, and these also are sent to each engineer.

3. Every six months, costs covering the whole of the division's activities are prepared. This takes about three months to complete, as they follow submission of the half-yearly accounts to area. Each engineer receives this complete cost statement, which affords him the opportunity of studying his own costs in conjunction with those of all other works, and the further opportunity of having available to him the costs of all districts and departments within the division.

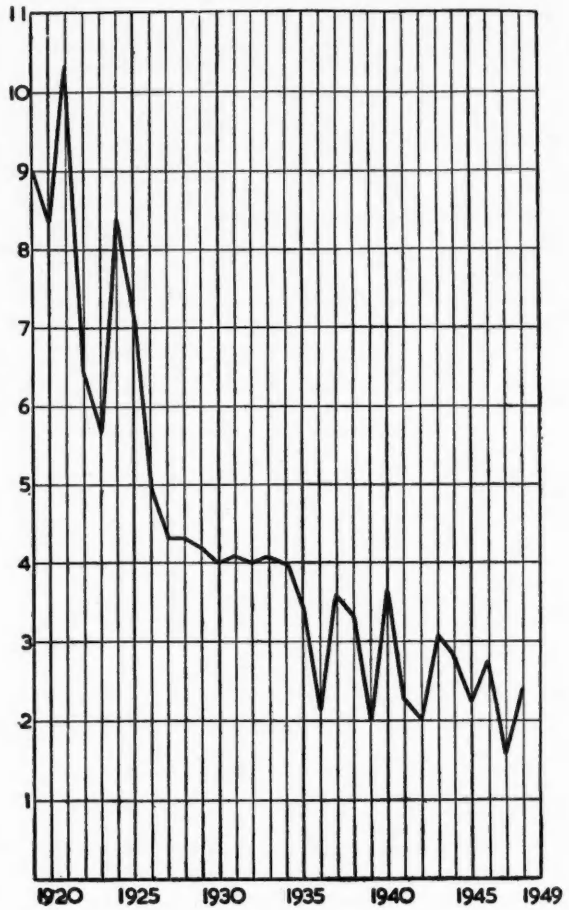


Fig. 8.—Percentage gas unaccounted-for at Berkhamsted, 1920-1949.

4. After the engineers have had an opportunity of examining and assessing their results, they attend a meeting called by the appropriate divisional officer, and the reasons for any abnormalities which may be due to either high or low costs are considered. It is also an opportunity for weighing suggestions against the background of the general policy.

5. Finally, in order to achieve complete co-ordination of all departments, the divisional officers meet to discuss the overall results, to lay plans for future action based on the figures, and to consider whether or not from some aspects more detailed information would be helpful. There is, of course, always the danger of extracting more information than can be usefully employed, so at these meetings the costing system itself is never allowed to escape a critical review.

I think you will naturally enquire—how does the engineer react to all this? Is the work worth while? Is the cost justified?

This basis of costing was largely used in the pre-vesting days by the former Watford and St. Albans Gas Company, so at vesting date three of our works engineers had experience of

(*Concluded on p. 794*)

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